P
Med

EDINBURGH

MEDICAL JOURNAL.

VOL. XXXVII.

JULY 1891 TO JUNE 1892.

430075
28.11.44

EDINBURGH:
OLIVER AND BOYD, TWEEDDALE COURT.
LONDON: SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED.

MDCCCXCII.

R
31
E22
v. 37
no. 1-6

EDINBURGH: PRINTED BY OLIVER AND BOYD, TWEEDDALE COURT.

ALPHABETICAL LIST

OF THE

CONTRIBUTORS OF ORIGINAL ARTICLES.

Atkinson, F. P., M.D., Surbiton.

Balfour, George W., M.D., LL.D., Physician to Chalmers's Hospital.

Ballantyne, J. W., M.D., F.R.C.P. Ed., Lecturer on Midwifery, Medical Col. for Women; Lecturer on Diseases of Infancy and Childhood, Minto House, Edin.; Physician for Diseases of Women, Western Dispensary.

Bell, Robert, M.D., F.F.P.S.G., Senior Physician to the Glasgow Hospital for Diseases peculiar to Women.

Boddie, George P., M.B.

Boyd, Francis D., M.B., M.R.C.P.E., Clinical Assistant, Royal Infirmary, Edinburgh.

Brewis, N. T., M.B., F.R.C.P. Ed., Lecturer on Gynæcology, Edinburgh Medical School; Gynæcologist, New Town Dispensary.

Clouston, T. S., M.D., F.R.C.P. Ed., Physician-Superintendent Royal Edin. Asylum for the Insane; Lecturer on Mental Diseases, Edin. University.

Croom, J. Halliday, M.D., F.R.C.P.E., Physician to the Royal Maternity Hospital; Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary; Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh.

Cullen, George Matheson, M.B.

Dickson, Walter, M.B. Ed., Clayton Hospital, Wakefield.

Donath, J. W. F.

Elkins, Frank Ashby, M.B., Assistant Physician, Royal Edinburgh Asylum.

Engelmann, Dr, Kreuznach.

Felkin, Robert W., M.D., F.R.S.E., L.R.C.P., L.R.C.S.E., etc., Lecturer on Diseases of the Tropics and Climatology, Edinburgh School of Medicine.

Ferguson, James Haig, M.D. Ed., F.R.C.P. Ed., M.R.C.S. Eng.

Ferrier, David, M.D., LL.D., F.R.S.

Gibson, G. A., M.D., Assistant Physician to the Royal Infirmary, and Lecturer on the Principles and Practice of Medicine at Minto House, Edin.

Gillespie, A. Lockhart, M.B., M.R.C.P.E., Medical Registrar, Edinburgh Royal Infirmary.

Greig, David M., M.B., F.R.C.S. Ed., Dundee.

Gulland, G. Lovell, M.D., F.R.C.P. Ed.

Hart, D. Berry, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery and Diseases of Women, Surgeons' Hall; Physician, Royal Maternity and Simpson Memorial Hospital; Assistant Gynæcological Physician, Royal Infirmary, Edinburgh; Examiner in Midwifery, University of Edinburgh.

Haultain, F. W. N., M.D., F.R.C.P. Ed., Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine; Obstetrician and Gynæcologist, Royal Dispensary, Edinburgh.

Henderson, W. A., Surgeon to the Imperial Maritime Customs, Chefoo.

James, Alex., M.D., Assistant Physician, Royal Infirmary, Edinburgh; Lecturer on the Practice of Physic, School of Medicine, Edinburgh.

Jamieson, W. Allan, M.D., F.R.C.P. Ed., Extra Physician for Diseases of the Skin, Edin. Royal Infirmary; Consulting Physician, Edin. City Hospital.

Keiller, Wm., F.R.C.S. Ed., Lecturer on Anatomy, Edinburgh Medical School.

Keng, Lim Boon, Queen's Scholar of the Straits' Government; Curator of the Library of the Royal Medical Society.

Lundie, R. A., M.A., M.B., F.R.C.S. Ed.

M'Bride, P., M.D., F.R.C.P. Ed., F.R.S.E., Aural Surgeon and Laryngologist, Royal Infirmary, Edinburgh, and Lecturer on Diseases of the Ear and Throat in the Edinburgh School of Medicine.

Mackenzie, G. Hunter, M.D., Surgeon for Diseases of the Throat and Nose to the Eye, Ear, and Throat Infirmary of Edinburgh; Corresponding Member of the Société de Médecine Pratique of Paris.

Macpherson, John, M.B., F.R.C.P.E., Stirling District Asylum.

Maddox, Ernest E., M.D. Ed.

Millar, James, M.D., C.M., Nottingham.

Morison, Albert E., F.R.C.S. Ed., Hon. Visiting Medical Officer, Hartlepools Hospital.

Morison, Rutherford, M.B., F.R.C.S. Eng. & Ed., Assistant Surgeon, Royal Infirmary, Newcastle-on-Tyne.

Murray, R. Milne, M.A., M.B., F.R.C.P.E., F.R.S.E., Assistant Physician, Royal Maternity Hospital; Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine.

Philip, R. W., M.A., M.D., F.R.C.P. Ed., Assistant Physician to the Royal Infirmary; Physician to the Victoria Dispensary for Consumption and Diseases of the Chest, Edinburgh.

Poole, Thos. Dobson, M.B , C.M. Ed.

Rutherford, Wm., M.D., F.R.S.S. L. & E., Professor of Institutes of Medicine, University of Edinburgh.

Savill, Thos., M.D. Lond., D.P.H. Camb., Medical Superintendent of the Paddington Infirmary.

Simpson, Alexander Russell, M.D., Professor of Midwifery and the Diseases of Women and Children in the University of Edinburgh.

Sloan, Allen Thomson, M.D.

Smith, W. Ramsay, B.Sc., Demonstrator of Anatomy, Edinburgh School of Medicine, Minto House.

Stalker, A. M., M.D., Physician to the Dundee Royal Infirmary.

Stewart, J. Purves, M.A. Ed.

Stewart, Wm., M.D., Surgeon to Leith Hospital.

Stiles, Harold J., M.B., F.R.C.S. Ed., Assistant to the Professor of Surgery, University of Edinburgh.

Symington, Johnson, M.D., F.R.S.E., Lecturer on Anatomy, Minto House, Edinburgh; Examiner in Anatomy, University of Edinburgh.

Thomson, J. Stitt, F.R.C.P. Ed., Dalkeith.

Thomson, John, M.D., F.R.C.P. Ed., Extra Physician to the Royal Hospital for Sick Children, Edinburgh; Lecturer on Diseases of Children, School of Medicine, Edinburgh.

Underhill, Charles E., M.B , F.R.C.P. Ed.

Walker, Norman, M.D. Ed.

Wallace, David, M.B., F.R.C.S. Ed., M.R.C.S. Eng.

Webster, J. C., B.A., M.B., Assistant to the Professor of Midwifery and Diseases of Women in the University of Edinburgh.

Wilson, Albert, M.D., Leytonstone.

Wyllie, John, M.D., Lecturer on Medicine in the Edinburgh School; one of the Ordinary Physicians to the Royal Infirmary, Edinburgh.

THE

EDINBURGH MEDICAL JOURNAL.

Part First.

ORIGINAL COMMUNICATIONS.

I.—FŒTID PLEURAL EFFUSION.

By ALEXANDER JAMES, M.D., Assistant Physician, Royal Infirmary, Edinburgh; Lecturer on the Practice of Physic, School of Medicine, Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 6*th May* 1891.)

UNDER this head are comprised—(1), Effusions, fœtid or stinking, because associated with, and resulting from, gangrene of the lung and superjacent pleura; (2), Effusions which, as the result of the access of air or of putrid materials, have become fœtid; and (3), Effusions which are fœtid, but in which by symptoms, by post-mortem examination, or even by both combined, the existence, on the one hand, of gangrene of the lung, and on the other of the means of access of air or putrid material, cannot with certainty be demonstrated.

GANGRENOUS EFFUSIONS.—The most cogent illustrations of these are the instances in which the dependence of the affection on lung gangrene is demonstrated by the discharge of necrosed pieces of lung tissue through the chest wall opening, after paracentesis. Of such the following *résumés* are probably the best examples:—

(Wagner, *Berlin. Klin. Woch.*, Sept. 6th, 1880.)—A lad, aged 17, was admitted to hospital Oct. 14th, 1878, suffering from dysentery. For this he was treated with salicylic water injections, and in about two weeks he had quite recovered. On Nov. 6th, however, he became again ill with symptoms which looked like those of an acute pneumonia of the left lower lobe, viz.,—rigors, pain in the side, cough, and rusty, viscid spit; pulse, 120; temp., 40° C. (104° F.) On the eighth day of this pneumonia the temperature began to fall gradually, and the lysis was complete on the twenty-first, the percussion dulness also getting gradually less. After the temperature had been normal for three days he was again seized with pain in the left side, and pleurisy with effusion was diagnosed. On the twenty-fifth day an exploratory puncture revealed the presence of a white, thinnish pus of a disagreeable odour, and showing by the microscope bacteria. Paracentesis was performed, and 700 grammes of a disagreeable but not quite putrid character were removed. For three days after this a discharge continued, but on the third day a piece of gangrenous lung tissue 7 cm. by 3 cm. (2¼ in. by nearly 1 in.) was removed through the wound opening. All the symptoms improved after this, but during the healing of the wound it was noticed that on washing out the pleural cavity with carbolic solution some of the fluid was expectorated, indicating the existence of a communication between this cavity and the bronchus. By Feb. 16th the wound had healed, and a yellow spit was all that remained to tell of the lung trouble. This by June 16th had disappeared, leaving the patient quite well.

The explanation of these events Wagner believes to have been that from the dysenteric bowel an infective process of embolic nature set up the pneumonia, and that this was followed by lung gangrene. He also considers that the fact that the fluid in the pleural cavity was at first not very fœtid was due to the gangrenous part of the lung being for a time covered in by the pleura and layer of inflammatory false membranes, so that only a fractional amount of putrid material obtained access to the effusion. The subsequent communication with a bronchial tube and consequent expectoration of carbolic solution was, he believes, due to the corroding action of the fluid on the cicatrizing portion of lung surface.

A very similar case has been reported by Ewart (*British Medical Journal*, vol. i., 1887).—A boy, aged ten years, while convalescing during the fourth week of typhoid fever, developed symptoms which looked like those of peritonitis, but which shortly indicated left-sided pleurisy with effusion. After a week he was aspirated, and ¾ pint of thick shreddy pus was removed, with relief to the most urgent symptoms. The following day the chest was opened freely in the anterior axillary line (fifth space) and in the scapular (ninth space), a large quantity of pus escaping. Free discharge continued, but no injection was used. On June 15th, perflation was performed under the spray in the manner depicted in the *Lancet*, July 31st, 1886. The air was delivered into the centre of the chest through the anterior opening and allowed to escape only at the posterior. The result was the expulsion of fœtid pus, of a piece of necrosed lung, and of heavy false membranes. A smaller piece of false membrane was expelled by perflation the next morning, and a small piece on the third day. From this time the fœtor ceased and the amount of pus decreased rapidly. On the eighth day the discharge was turbid and serous, and it remained serous to the end. Both wounds were closed on the thirtieth day from the date of the incision.

In other cases the dependence of the effusion on gangrene of the lung is indicated only by fœtid expectoration. Of such the following is a good example (Frænkel, *Berl. Klin. Woch.*, April 28th, 1879).

A boy, aged 12 years, fairly well built, was suddenly seized with symptoms indicating pleuro-pneumonia of the right lower lobe. The crisis occurred on the eighth day, but during the next twenty-four hours the temperature began again to rise, and the other symptoms—pain, dyspnœa, etc.—to return, with physical signs of increasing effusion. On the fourteenth day after the crisis fœtid expectoration suddenly occurred. Lung gangrene was accordingly diagnosed, paracentesis was performed, and 500 cc. of fœtid fluid were evacuated. In two months the patient was quite recovered. In this case the portion of lung which had become gangrenous was probably so small that its separation in broken-down granular and molecular matter and not in mass was possible.

In other cases neither fœtid expectoration nor the discharge of gangrenous portions of lung through the chest wall has occurred. Thus, J. B., age 53, a domestic servant, was first seen by a doctor April 3rd, 1887. She stated that she had been exposed to cold eight days previously; that on the evening of that day she had had a shivering, and that ever since she had felt very ill. She had great pain in the left side on taking a long breath and on coughing, and she stated that this pain and cough had been getting so much worse, and that she had been getting so weak that she was now compelled to remain in bed. Finding some impairment of the percussion note about the inferior angle of the left scapula, with weakening of the breath sounds and slight crepitation, a pleuro-pneumonia was diagnosed, and she was sent to hospital. On admission her temperature was 103°·2 F.; pulse 120, very soft and compressible; respirations, 25 per minute. She had cough with scanty mucous expectoration, severe pain in the left lower and lateral region of the chest, and the physical signs indicated pleural effusion, the dulness reaching nearly as high as the spine of the scapula posteriorly and the fifth rib in the axillary line. On the second day after her admission the pain was somewhat easier, but with the dyspnœa, fever, and sweatings, her general condition was manifestly worse. An exploratory puncture was made, and a hypodermic syringeful of grayish-yellow watery and horribly fœtid pus containing bacteria was drawn off. On the same day the chest was freely opened and about 60 oz. of a similar fluid was evacuated. Little improvement followed, and the patient rapidly becoming more collapsed, death occurred on the evening of the following day.

On post-mortem examination the upper part of the left lung was found adhering to the chest wall. The lower part was collapsed and œdematous, and its surface was covered by a layer of grayish-yellow false membrane. On section there was found on the posterior surface of the lower lobe a patch of gangrene, shaped like a very flat triangle, the base of the triangle corresponding to the pleural membrane, and being in extent from above downwards about 2 inches. The aorta was atheromatous, and the heart distinctly fatty. In this case no fœtid spit had been detected, but of course it might be maintained that had a better-nourished heart enabled the patient to live a little longer the characteristic fœtor would have been met with.

But now, if two such clear indications of lung gangrene as fœtid spit and the discharge of sphacelated lung tissue be not present, how are we to be certain in any case of stinking effusion which recovers, or in which no post-mortem examination is obtainable, that we have been dealing with an effusion due to lung gangrene? This can, however, best be understood after considering the subject of putrid effusions.

Putrid Effusions are effusions in which decomposition has taken place as the result of the access of putrefactive organisms. This access may be brought about in very many ways. It may be directly through the chest wall as the result of repeated tappings when antiseptic precautions have not been sufficiently attended to. Although nowadays such cases are but seldom met with, still they occur, the usual sequence being a sero-fibrinous effusion treated by repeated tappings becoming gradually purulent, and this, treated by free incision, becoming in turn fœtid. But it may occur also in a less easily avoidable manner, *e.g.*, an empyema may have opened through the chest wall before being seen, or it may have opened into a bronchial tube, and through the opening by which the pus escapes, air with its contained germs may enter. Again, as the result of the rupture of a lung hydatid or abscess, putrid effusion may occur; whilst a phthisical cavity situated superficially may burst into the pleura, producing pneumothorax, and the sero-purulent effusion which in time shows itself may be fœtid. As a fact, however, the exudation in cases of tubercular pneumothorax has little tendency to putrefy as compared with that of all non-tubercular cases in which an opening is established between the bronchi and the pleural sac. This has been explained on the theory that tubercular fluids do not form a suitable soil for the growth of other micro-organisms (*Berl. Klin. Wochenschr.*, No. 20, 1888), a theory for and against which, however, something may be said. Thus it is to be remembered that the putrefactive changes brought about in tubercular sputum as the result of long keeping do not seem to diminish the potency of its contained tubercle bacilli, and that surgeons tell us that septic and putrefactive organisms in a wound favour rather than impair the power for harm of a tubercular process. Be this as it may, I have no hesitation in expressing the opinion that this antagonism theory may to a considerable extent be a correct explanation. Fœtid lung cavities rarely become tubercular; and among the few cases of tubercular phthisis which I have seen in which, after the formation of cavities, a fœtid spit and fœtid odour of breath have shown themselves, I have witnessed some very striking instances of amelioration in the symptoms, physical signs, and general condition of the patients.

Other causes of putrid effusions are ruptures into the pleural cavity of a gullet as the result of malignant disease, and ruptures into the pleural cavity from the abdominal. Thus a gastric ulcer perforating the diaphragm may act in this way.

Remembering that abscesses beneath the diaphragm, like all collections of pus in the abdominal cavity, are specially apt to be fœtid, and remembering also that abscesses beneath the diaphragm are likely to entail inflammatory and suppurative changes above it, *i.e.*, in the pleural cavity, either by perforation of that structure or by absorption processes through it, we should be prepared to meet with putrid empyemas as frequent associates of sub-diaphragmatic abscesses. This we do, but I am persuaded not so frequently as we might expect. Thus in a case in Ward 23 (M'Peet), in which an abscess of the spleen had caused an empyema of the left side, there was fœtor, neither of the abdominal nor of the pleural pus; and in another case in Ward 23 (Tyler), in which, with tubercular peritonitis and waxy spleen, a large collection of pus beneath the diaphragm had given rise without perforation to a right empyema, although the pus underneath the diaphragm was decidedly fœtid, that above was not so.

But now, just as we have noted at page 4, that difficulty must occur in connexion with the diagnosis of gangrenous effusion, should fœtid spit be absent and should there be no discharge of sphacelated lung tissue, so a difficulty must occur in connexion with the diagnosis of putrid effusion in cases where means of access of putrid germs to the effusions are not evident.

This leads to the consideration of the third class of fœtid effusions, namely,—

EFFUSIONS WHICH ARE FŒTID, but in which by symptoms, by post-mortem examination, or even by both combined, the existence on the one hand of gangrene of the lung, and on the other of means of access of air or putrid material, cannot with certainty be demonstrated.

The following cases appear to be good examples of this:—

(Bouveret, *L'Empyème*, p. 500.) *Résumé.*—A weakly lad of 20 had on Oct. 16th chills and fever, with pain in the right side, cough, and sero-mucous spit, and he entered hospital with these symptoms on the fifth day of the disease, when right-sided pleurisy with effusion was diagnosed. On Nov. 2nd he was distinctly worse, pulse small and frequent, tongue dry, and some œdema over the right chest was noted. Aspiration was performed, and without emptying the pleural cavity 600 grms. of a chocolate-coloured horribly fœtid fluid were drawn off. Little or no improvement followed, and on Nov. 5th a new aspiration withdrew 500 grms. of a similar fluid. The chest was then washed out with a weak solution of phenic acid, a quantity of air entering the cavity during this latter operation. Again no improvement followed, and the patient died on Nov. 7th.

Autopsy.—"Complete collapse of the right lung. The lung shows neither tubercle nor gangrenous foci—it disappears under a thick coating of grayish false membranes. No gangrenous plaques on its surface. Insufflation and careful examination of the organ discovered no perforation. The pleural cavity is filled with about a litre and a half of a brown-green liquid. In that liquid is found a brownish mass, in colour, appearance, and consistence resembling fæcal matter. The weight of this detritus is about 200 grms. (about 6 oz. Troy). It contains numerous leucocytes and a feutrage of fibrils which resist acetic acid. One can ask if these fibrils are not of vegetable nature. M. Malassez considers rather that they consist of long crystalline needles." The other organs in this case were comparatively healthy.

Here, then, is an instance which but for the post-mortem examination would have been classed under the gangrenous pleurisies. It is, however, considered by Bouveret to be an example of putrefactive decomposition of a pleural effusion. As to how the putrefactive germs gained access, Bouveret says, "Nous sommes réduits à présumer qu'ils ont été amenés dans la pleure par la circulation sanguine."

The following is a very similar case:—

J. V., æt. 58, was admitted to Ward 23, July 4th, 1888. His family and personal history were good, and he stated that he had been exposed to cold ten days previously. He had a rigor on that day, and felt very unwell. Next morning he had pain in his left side, which was very severe, and caught his breath. He remained in bed, and was being treated for pleurisy of the left side, but finding no improvement he came to the Infirmary. On admission his pulse was 120, regular and soft; his temperature varied between 99° and 102°; his respirations were rapid and shallow. Examination showed dulness over the left chest, beginning in front at the fifth rib, and in the axillary line at the fourth rib. Posteriorly percussion impairment began about the spine of the scapula, becoming more marked on passing downwards. Over the dull area the respiratory sounds were weak, and at the third, fourth, and fifth spaces anteriorly friction was recognised.

The distress continuing, with shiverings, sweatings, and some wandering at night, and the signs of effusion becoming more marked, the chest was punctured on July 20th. The presence of fœtid pus was in this way clearly demonstrated, but in spite of the removal of this by drainage, he died on July 26th. Fœtid spit was never present.

Post-mortem Examination.—"On the left side a loculated empyema occupying the posterior half of the lower fourth of the upper and the upper three-fourths of the lower lobe. The pleuræ over the remaining portion of the lung united by recent fibrinous adhesions. The empyema did not quite reach the posterior border of the lung at its lower extremity, about three inches of lung being uninvolved in it. The loculus was full of dark gray intensely fœtid fluid, and the pleura covered by a grayish-yellow irregularly eroded membrane. On section, the upper half of the lung was congested, the lower lobe carnified."

But if an exact diagnosis is difficult to arrive at in cases of fœtid effusions in which neither fœtid spit nor the discharge of sloughed lung tissue are met with during life, and in which even by a post-mortem examination neither traces of lung gangrene nor means of access of putrefactive organisms are revealed, much more difficulty is experienced in coming to a conclusion in cases which recover. Of such the following four are fairly typical examples:—

1. P. M., æt. 34, a well-nourished, stoutly-built man, was admitted into Ward 23, March 21st, 1890. He had a good family and personal history, except that as a bottler in a brewery he was in the habit of taking more than the ordinary amount of beer daily. His complaints were shortness of breath and pain in the right side, and he dated his illness to a period three weeks previously. At that time he had a shivering, and the pain came on with cough, watery and frothy expectoration, and now and again a little vomiting. Notwithstanding these symptoms he never laid up nor consulted a doctor, but kept at work for a week. Then, however, the symptoms continuing, and the pain becoming worse, he laid up in bed and applied a blister to the side. This relieved the pain somewhat, but the other symptoms, cough and expectoration, continued as before. Profuse sweatings occurred, with loss of appetite, thirst, and feeling of weakness, so he came to the Infirmary. On admission his pulse was 100, regular, but slightly dicrotic; temperature, 102°·4; respirations, about 30 per minute. Physical examination of the chest showed a somewhat tympanitic note over the upper part of the right side anteriorly and posteriorly, and over the lower part marked dulness, the upper limit of which was marked out by a line extending from the spine of the scapula posteriorly to the fourth rib in the axillary line, the fourth rib in the nipple line, and the fifth rib in the parasternal line. Over this dull area there was more or less distinct absence of vocal fremitus, respiratory murmur, and vocal resonance, whilst displacement of the heart to the left and of the liver downwards was recognised.

Pleuritic effusion was diagnosed, but as the pulse kept about 110, the temperature varied between 98° and 102°, and as with those changes in temperature profuse sweatings were associated, the probability of purulent effusion was recognised, and an exploratory puncture with the hypodermic needle determined upon. This was performed on March 25th, and after several punctures over the dull area, one in the posterior axillary line resulted in the obtaining of a few drops of a dirty greenish yellow, apparently fœtid fluid. Paracentesis was therefore resolved upon, but as the precise position of the fluid had not been made quite clear by the punctures, and as it was considered possible that the hypodermic needle might be too small to allow the fluid to pass, a small probe-pointed trocar was used instead. To avoid risk of accidents this was connected with a rubber tube, the end of which was immersed in boracic solution. A puncture made at the level of the eighth space in the scapular line gave exit to 40 ounces of fœtid, somewhat shreddy, grayish-yellow pus. Next day, March 27th, paracentesis was performed by Mr Caird, about one inch of the eighth rib at the site of the puncture being resected. A large quantity of fœtid fluid was removed, and a drainage-tube being introduced, the wound was dressed in the usual way with salicylic wool. After the operation the patient expressed himself as feeling better, but the temperature kept varying between 102° and 99°, the pulse about 120, the respirations about 30, and the discharge continued fœtid. About the 6th April, however, the temperature began gradually to fall, and although on two occasions afterwards it rose temporarily, apparently as the result of retention of some of the scanty fœtid secretion, his progress towards recovery was continuous. To avoid any risk of detention of discharge, the tube, although much shortened, was kept in until June 1st. He was discharged from the hospital on June 18th with the wound nearly healed. Physical examination of the chest then showed a circular patch of dulness about 3 inches in diameter in the region of the operation wound, the breath signs, however, being fairly well heard all over the side.

In this case, although carefully looked for, at no time was the expectoration fœtid, and no discharge of sloughed pieces of lung tissue occurred.

2. (Dr William Russell, *Glasgow Medical Journal*, 1878.) A girl, æt. 21, was first seen Sept. 1st, 1881, with symptoms of left-sided pleurisy. By 8th Sept. the fluid had collected in such quantity that tapping was considered necessary, and about a pint of excessively fœtid pus was withdrawn. Next day the chest was incised, thoroughly washed out with carbolic solution, and a large drainage-tube inserted. In a few days the discharge became sweet and less in quantity, but for a time a cough was troublesome. On Oct. 3rd it was noted that a bad smell was perceptible in her breath after paroxysms of coughing, and on Oct. 13th, as the result of such a paroxysm, she is stated to have brought up about half a teacupful of " what tasted like rotten eggs." After this the cough became much easier, and though it and the fœtor of breath continued for some months, it gradually disappeared, and the patient progressed towards complete recovery.

In this case Dr Russell gives it as his opinion that the pleurisy was not due to lung gangrene, and quoting seven somewhat similar cases, in all of which the left was the affected side, he expresses his belief that the fœtid character of the fluid might be accounted for by the fact of the large intestine being in contact with the under surface of the diaphragm, and consequently in close proximity to the pleura. Further, as regards the fœtid expectoration, Dr Russell gives the following explanation:—

"The presence of a purulent and stinking expectoration on several occasions after the drainage-tube had been withdrawn, and preceded by severe and paroxysmal cough, pointed to a cavity which must have been formed during the healing of the large one. This smaller cavity must, I think, from the clinical history of the case, be regarded as a pleural one, which, becoming over-distended, led to irritation of the adjoining portion of lung, thus causing cough, and finally spontaneous cure by perforation. If we remember how favourable the physical conditions between the diaphragm and the base of the lung are for an islet of infection to become surrounded and shut in by adhesions, which constitute the cure of such a case, we have a ready and sufficient explanation of this accidental element in the case."

3. (Dr Douglas Powell, *Trans. International Congress*, vol. ii. p. 143.) A young lady of consumptive family had six weeks previously been seized with symptoms of acute pleurisy, which appeared to subside, but recently hectic symptoms had developed, with aphthous mouth and complete intolerance of food by the stomach. The chest signs were those of a large effusion into the left pleura, displacing the heart to the right of the sternum. Paracentesis was advised, and on the second day Dr Stamford removed by the aspirator 25 oz. of fœtid, purulent matter. Later on the chest was opened and a tube introduced, and at last accounts the patient was doing well.

4. A. K., æt. 31, joiner, was admitted to Ward 23, April 3rd, 1891, with symptoms and signs of pleuritic effusion. His family and personal history were good; his surroundings at home and at work were quite equal to the average. He had been a sergeant in the artillery, and had served for ten years, and he had always been fairly temperate. His height was 5 ft. 9½ in., and his ordinary weight was about 12 stones.

Present illness dated from about three months before his admission, when he stated that after having noticed himself somewhat out of sorts for a week, he was, after some exposure to cold at work, seized with pain in the back, which was very severe and continued for days. This gradually mended, and after some three weeks in bed he began to move about. Cough then began to affect him; but in spite of this and of the weakness and breathlessness which he was experiencing, he continued to go about and do light work. Gradually, however, his symptoms became aggravated, and on

March 28th he had again to take to his bed. He was then advised to come to hospital, and he came and was admitted on April 2nd.

On admission, although his general condition was fairly good, he was evidently pulled down. His weight was 10 st. 6 lbs. Resp., 25; temp. varied between 97° and 100°·5; pulse, 75, regular, rather soft. He had a cough, usually slight and dry; but he had no chest pain unless the cough became troublesome.

Physical examination revealed left-sided pleuritic effusion, and it was noticed that the area of dulness and of absent fremitus, respiratory murmur, and vocal resonance was situated more posteriorly than in ordinary pleural effusions. The "curved line" was distinct, but its highest point was about the spine of the scapula, and percussion from above downwards in the mid-axillary line revealed no dulness whatever—*i.e.*, the anterior limit of the dull area was about the posterior axillary line.

The heart was in its normal position, and the tympanitic note of the stomach in front could be detected a little higher than usual. Tongue was clean; the patient enjoyed very good appetite and digestion, and the bowels were regular.

In this case, owing to the general mildness of the symptoms, I diagnosed pleurisy with sero-fibrinous effusion. The facts, however (1), of the initial pain having been very severe, and (2) of the position of the dull area being situated more posteriorly than usual in such effusions, were noted; but it was believed that the great pain had been due to some muscular rheumatism, or to some associated nephritis, of which there had at first seemed to be some indications, and that the position of the dull area might be explained on the supposition that during the effusion stage he had been lying on his back.

I therefore ordered rest in bed, good diet, and iron and quinine internally, and waited a few days to see if then any indications of absorption would show themselves. On April 9th I examined his chest again, and finding absolutely no change in this respect, I proceeded to aspirate, intending by removing a few ounces of fluid to favour further absorption. To my surprise, however, I found brownish-yellow purulent fluid, with a horribly fœtid odour. The aspiration was at once stopped, and I arranged with Mr Caird to have the operation of free incision and drainage performed next day. Owing mainly to the objection of the patient the operation was postponed, and on the afternoon of April 13th he suddenly coughed up a large quantity of frothy, purulent expectoration, having a somewhat fœtid odour, and showing under the microscope streptococci, diplococci, and some bacilli. This expectoration continued to come up in large quantity all that day and the following night. Next day the operation was performed, the incision being made in the line of the inferior angle of the scapula, and a small portion of the seventh rib being resected. After a large quantity of extremely fœtid brownish-coloured fluid had welled out, a drainage-tube was inserted, and the wound dressed as usual with salicylic wool. The subsequent course has been very satisfactory. The expectoration ceased within a few days of the operation, the discharge has gradually diminished and lost its fœtor, and the lung has expanded. At no time has any piece of gangrenous lung tissue come away.

And now, How can the presence of putrid effusion in such cases be explained? Bearing in mind that in one or other of them a small and superficial patch of gangrene of the lung may possibly have been existent without making its presence known by fœtid spit or discharge of expectorated tissue, or that a small superficial lung cavity may possibly have been present, and by its rupture allowed a maximum of germs and a minimum of air to enter the pleural cavity, we are yet bound to admit that these hypotheses are not satisfactory. Remembering, too, that fœtid sub-diaphragmatic abscesses may set up non-fœtid empyemas, it seems difficult indeed to divine how to the pleural fluid in such cases putrid germs have gained access. As a working hypothesis, however, I would suggest one based on observations made many years ago by Mr Caird.

Mr Caird took freshly killed cats, rabbits, and pigeons, and having carefully washed the skin, etc., with antiseptic solutions, he opened the bodies under the spray, and with strict antiseptic precautions inoculated flasks of sterilized meat infusions with portions of liver, lung, kidney, spleen, muscle, and blood. On incubating these he found, after an interval of time, that every one of them contained micro-organisms, and that in the case of the liver these were in some instances putrescent.

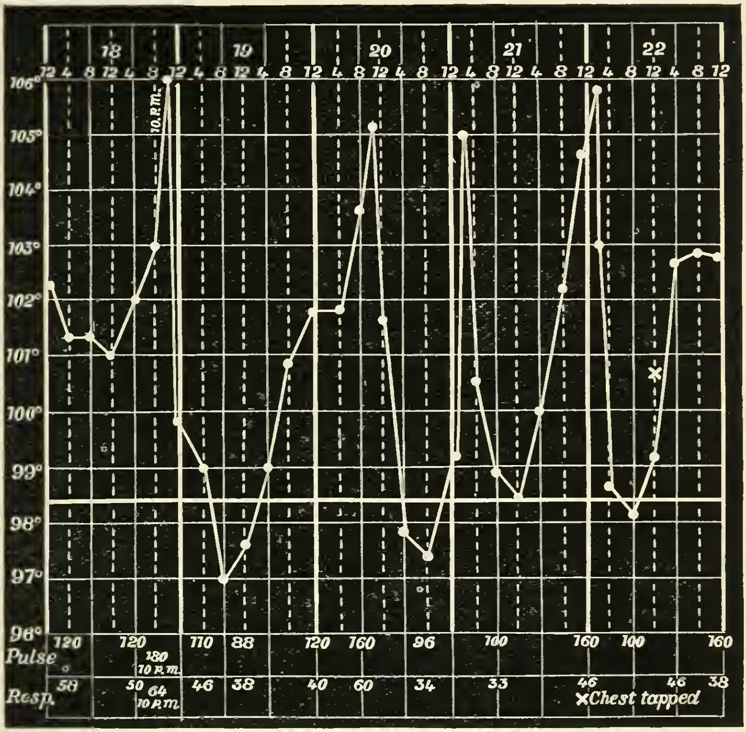
There can, I think, be no doubt that normally the various tissues contain micro-organisms, some of them putrefactive; but that owing to the phagocytic action of the normal tissues, their effects for harm are prevented. Given, however, some exhausting condition—as, for example, convalescence from acute disease or chronic alcoholism—this phagocytic action will, of course, be lessened; and to this let an acute pleuritic process be superadded, it is not unreasonable to believe that in connexion with the inflamed tissue these germs may be able to secure for themselves a nidus for their growth and development.

The Etiology and Symptomatology of fœtid pleural effusion are those of pleurisy, empyema, lung gangrene, and the various conditions which lead to the access of putrefactive organisms to the effusion. They, therefore, need not be considered in detail; attention need only be paid to certain peculiarities which, though not absolutely characteristic, are yet of special importance in connexion with the recognition of the malady. Further, as the etiology and symptomatology of the second variety of fœtid effusion, viz., putrid effusion, are comprised in the conditions which lead to the access of the putrefactive organisms, the following remarks apply mainly to the first and third varieties, viz., effusions due to gangrene of the lung and fœtid effusions of uncertain origin.

Etiology.—Fœtid effusions occur in childhood and in early and late adult life. They are more frequent in males than in females; and though they may affect the robust as the result of severe exposure, injury to the chest walls, falls, and excessive muscular strain, etc., they are more frequent in those who are constitutionally weak, or who have been weakened by previous disease. Like gangrene of the lung they are frequent in the alcoholic, they seem to have supervened in some cases on ordinary pneumonias, their occurrence has been repeatedly traced to embolic causes, and they have also been met with in cases where tubercular lung mischief might be suspected.

Symptomatology.—Fœtid pleurisy is usually ushered in by specially severe initial symptoms; the shiverings and rigors are well marked, and the fever high. The chest pain is much complained of in the early stages of the affection, to such an extent that even then physicians may suspect that they have to do with something more than a simple pleurisy. The cough is also troublesome, and in cases of gangrenous effusion the expectoration may at an early stage be fœtid, and fœtor of the breath may be observed. More frequently, however, those characters of spit and breath are not noticeable till later, and cases occur where they are not present at all. The absence of fœtid spit in a certain proportion of gangrenous effusions is explained as due to the layer of sphacelated lung being in contact only with the smaller bronchi. In this way gangrenous matter cannot readily find its way into the larger tubes to be expectorated, more especially when, let it be remembered, these small bronchi will be rendered practically impermeable by the inflammatory œdema associated with the existence and discharge of the slough. But whilst the absence of fœtid spit does not necessarily exclude gangrene of the lung as the cause of the effusion, it is to be remembered also that the presence of fœtid spit is not necessarily absolute proof of the existence of lung gangrene. As indicated at pages 9 and 10, in cases of fœtid effusions a quantity of the putrid fluid may, by corroding the lung tissue around, find its way into the bronchi, and be expectorated as fœtid spit.

In the course of fœtid effusions the fever soon begins to assume a hectic character, doubtless due to reabsorption of morbid material from the effusion. Large oscillations show themselves in the temperature chart, the rises being preceded by shiverings and the falls by sweatings. The pulse also is apt to become rapid and weak, probably due to the toxic action on the heart of this reabsorbed matter. As the result of the severe chest pain, of the mechanical effects of the effusion, or of the fever, dyspnœa is sooner or later a common symptom of the disease. This condition of fever is well shown in the Chart, which is taken from the case of a patient, E., also in Ward 23, two years ago, and in which the fœtid effusion was found by post-mortem examination to have been due to lung gangrene.



James E., Ward 23. Fœtid Effusion from Lung Gangrene.

It is to be remembered, however, that, as in the case of K., page 9, this characteristic fever may be conspicuously absent.

The physical signs are those ordinarily met with in pleural effusions, viz., dulness on percussion, with absence of vocal fremitus, of breath sounds, and of vocal resonance. In cases where the effusion is considerable in quantity these signs are easily discovered over the greater part of the side affected, with displacement of the heart to the opposite side and even of the diaphragm downwards. But with smaller effusions the percussion and auscultation signs are present only over a more limited area, and this area corresponds in the main with the position ordinarily assumed by pleural effusions occurring in patients who have been kept in the recumbent position. That is to say, they will be met with at the lower part of the chest, somewhere between the posterior axillary and scapular lines. Œdema of the chest parietes is a frequent associate of the condition.

By the hypodermic syringe the presence of fluid can be demonstrated and its characters investigated. It has, of course, the characteristic fœtid odour, and though to the naked eye it may present the appearance of yellow laudable pus, more frequently it is somewhat watery and grayish, or even brownish in colour. Microscopically it presents, of course, pus corpuscles with molecular and granular matter, and bacteria, living or dead and immobile. The presence of dead bacteria is interesting, and may readily be explained as being due to the toxic effects on themselves of the products of their own existence. It is possible, too, that the molecular and granular matter may be to some extent the broken-down remains of these organisms thus destroyed.

Course and Prognosis.—Fœtid pleurisy is always a very grave malady; but there is no doubt that, even when it is due to lung gangrene, if the amount of lung tissue affected be not too great, and if proper treatment, viz., free incision and drainage, can be carried out early enough, a remarkably favourable result may ofttimes be obtained. This, too, in cases which appear to have become desperate; and, indeed, writers on this subject expressly state that operative interference should not be neglected, even though the patient is almost moribund.

Treatment.—This is, of course, free incision and drainage at the earliest possible moment. Concerning the operation, the following general points need only be noticed. The point of election for the operation will vary somewhat in each case, and will often be best determined by exploratory puncture with the hypodermic needle or trocar; but, as a rule, it will be in the seventh or eighth interspace, somewhere between the posterior axillary line and the line of the inferior angle of the scapula. This point is in position more posterior than the one usually most suitable for incision in ordinary empyema, or for simple puncture in a sero-fibrinous effusion. It is, however, nearer the ordinary site of lung gangrene—namely, the posterior border—a matter of great importance when it is remembered that in gangrenous cases the portion of lung involved may be large enough to come away as a slough. Further, it is always safer to resect a portion of rib, inasmuch as too early closure of the wound by approximation of the ribs is avoided, and an opening large enough for the free entrance of the drainage-tube and removal of any slough obtained. After the operation, and at the subsequent dressings, as long as a fœtid discharge continues, the pleura may be gently laved out with some antiseptic; warmed boracic solution suits very well. This washing out, however, may often be omitted, but any appearance of sloughed portions of lung tissue must be looked for, and care must be taken lest here and there fœtid discharge be retained by adhesions forming as the lung expands between the pulmonary and costal pleuræ.

It should be remembered that what is desired is to secure free exit to the fluid, escape of false membranes, and any pieces of sloughed lung tissue, and to prevent any retention by the premature formation of adhesions. In the majority of cases the operation above described will be found sufficient. Another plan recommended is the making of two incisions—an upper, *e.g.*, in the fifth interspace, and a lower, in the space next to the diaphragm—the latter being found by passing a probe within the thorax downwards from the first and higher incision. Ewart has recommended "perflation"—that is, the passing through the pleural cavity of antiseptic air, as described in the *Lancet* for 31st July 1886.

It is noteworthy that after the operation, especially in cases of gangrenous pleurisy, the amelioration in the patient's symptoms—fever, sweatings, cough, etc.—is not usually so marked as after the operation in cases of ordinary empyema. This will be readily understood when it is remembered that, whilst in the latter case the purulent effusion is the main cause of the symptoms, in the former the lung gangrene exists and remains for a longer or shorter period of time after the removal of the fluid.

A further point to which reference is made by Frænkel (*Berl. Klin. Woch.*, May 1879) is that evacuation of the fœtid fluid by an aspirator instead of by a free incision may possibly do harm. Frænkel quotes a case in which this was done, and in which during aspiration, suddenly and with a hissing noise, air became mixed with the fluid, indicating the rupture of a gangrenous cavity in the lung. Two days afterwards the chest was opened, coagulated blood escaped through the wound with the gangrenous fluid, the patient had a severe hæmoptysis, his face became cyanotic, and he died, apparently of suffocation, on the operating table. Frænkel considers that in this case negative pressure produced in the pleural sac as the result of aspiration had caused rupture of a gangrenous lung cavity and an opening into an arterial trunk, which up till that time had been occluded by a thrombus.

Whether this is the correct explanation or not, we can readily understand that aspiration in such cases must entail the risk of separating the sloughed portion violently by the strong negative pressure which it can induce in the pleural cavity, and we can also understand that it can never fully get rid of the fluid. But it is also to be remembered that in gangrenous pleurisy the adhesions between lung and costal pleura must ofttimes be not very firm, and that therefore a more than usual risk of lung collapse must accompany the free ingress of air. A piece of folded lint moistened with some antiseptic solution should always during the operation of opening the chest be held over the wound, so as to act after the manner of a valve—that is to say, to allow the fluid to escape, and at the same time guard against the too ready ingress of air to the pleural cavity.

II.—THE NEUROSES OF DEVELOPMENT:

BEING THE MORISON LECTURES FOR 1890.

By T. S. CLOUSTON, M.D., F.R.C.P.E., Physician-Superintendent, Royal Edinburgh Asylum for the Insane; Lecturer on Mental Diseases, Edinburgh University.

(*Continued from vol. xxxvi. page* 1119.)

LECTURE III.

Developmental Epilepsy and Epileptic Insanity.

ALMOST all cases of true epilepsy first arise during the growth and development of the brain. This sweeping statement I shall be able to prove statistically. The disease is, therefore, of all the graver neuroses one of the most developmental. In general importance it ranks among the neuroses next to insanity, both as to frequency and seriousness. From the first appearance of nervous ganglia and nervous centres in the animal kingdom there are certain essential and basal qualities which these ganglia and centres exhibit, and without which their action would be ineffective, or even destructive to the life of the general organism. The first of these qualities is that which gives solidarity to the whole organism in its different organs and tissues—in fact, which makes organic differentiation reconcilable with organic unity in the higher animals. The second great quality is that which tends to active co-ordination for the general welfare of all the energizing processes. The third great quality is closely connected with the last. It is that which exercises control and inhibition to a greater or less extent over every vital process. The trophic nerves control and regulate the molecular motions that accompany the chemico-vital changes of the secondary digestion, metabolism, and katabolism, of nutrition, secretion, excretion, etc. The motor ganglia need an inhibitory apparatus to regulate the amount of motor energy to be expended and to arrest motor stimulus when sufficient for the purpose served has been exerted, just as much as they require a liberating apparatus to send the motor current to the muscles.

We have already seen some examples of developmental diseases due to diseased action of the trophic apparatus, such as dwarfishness, asymmetry, tuberculosis, acne, etc. We have also seen some examples of diseased action in the co-ordinating and inhibitory apparatus in the lower brain centres, the second and third "levels" of the nervous hierarchy, such as chorea, asthma, etc. Now we are to see examples of disturbance in the co-ordinating and inhibitory apparatus in the highest regions of the brain cortex that originate and control voluntary motion and volition itself. Hughlings Jackson did a great service to Physiology and to Medicine when he coined the expression "discharging lesion" of the motor cortex to express convulsive movements. To discharge motor energy is the function of great tracts of brain cortex. To have a "lesion" in this discharging function means that the essential quality of a motor apparatus is impaired. Force of any kind that cannot be restrained and regulated is necessarily destructive, whether it be the lightning, the runaway locomotive, or the motor centre in the brain cortex during an epileptic fit. It is one of the basal and essential qualities of that cortex which has then gone wrong. Therefore it is not surprising that we have to go back to a bad heredity for the origin of most cases of epilepsy; and when we find it in pathological affinity with almost all the other developmental neuroses, most notably of all with insanity, we realize that it is the type and acme of all the explosive disorders. The essence of the epileptic lesion is loss of power in the inhibitory motor cells; the essence of the lesion in typical insanity is loss of the inhibitory power in the mental areas. Motion precedes mind as a vital quality, and attains perfection sooner; therefore epilepsy arises at an earlier period of life than insanity, though, as we shall see, it is commonly in turn followed by idiocy and mental weakness when it arises early in life. There are the two forms of epilepsy now generally recognised as distinct from each other, viz., the "Jacksonian" form without primary abolition of consciousness, and the "real" or more common form in which consciousness is necessarily involved. I do not attach the same importance to this distinction as some authors do, especially from the standpoint of these lectures. I agree with Jackson that those two forms of epilepsy may be regarded as affecting different "levels" of the motor hierarchy he theoretically sets up, beginning with the lowest reflex circuit, and ending with the highest mental-motor acts of volition and power of attention. But the condition that makes both forms of epilepsy pathological modes of motor energizing is the same, viz., a lack of the normal inhibitory quality in the evolution of the energy of the motor cells. In the Jacksonian epilepsy we commonly find a gross and evident local source of irritation in the nervous centres, but such lesions do not always and necessarily cause periodically recurring convulsions. This effect is due to an innate lack of motor inhibition in the brain that exhibits it.

No one who has really seen much of epilepsy, and traced the heredity and clinical history of his individual cases, as well as examined a large number of brains of epileptics post-mortem, can have any doubt whatever that the disease is in its essence the result of a morbid quality in the working of the motor centres of the brain, and is not really due to localizable or "exciting" causes in ninety-nine cases out of a hundred. It is the result of unregulated, undue explosiveness or liberation of energy. The gas-engine is a fit type of the normal working of the motor cortex. Through an infinite number of small and regulated explosive liberations of energy steady motion is obtained. This is done by the co-ordination of a delicate machinery. But if the reservoir of gas takes fire and explodes all at once, and all its potential energy is thereby thrown away, we have a good type of what takes place in the brain during an epileptic fit. Any brain cortex may in extraordinary circumstances, or when subjected to the stimulating influence of certain poisons, explode in all its motor centres at once, and so produce a general convulsion. But when a brain is found to have a habit of explosion at periodic times from no extraordinary stimulus whatever, then we must look for the origin of this in an innate pathological quality. And we will find that in 90 per cent. of the cases this diseased quality has first shown itself as epilepsy during growth and development before the period of completed organic maturity at twenty-five. Gowers, Hasse, and Reynolds put the commencement of 75 per cent. of all their cases of epilepsy under twenty. If we deduct the cases that arise after that time through traumatism, through gross brain disease accidentally localized in the motor centres, and through the effects of syphilis, we have very few uncomplicated cases left other than those due to a developmental neurosis.

But at what precise periods of growth and development does the disease arise? Taking the first great nutritive and formative period of brain growth, from birth up to seven, Gowers'[1] most valuable statistics of his 1450 cases enable us to give the best reply to this question. He found that 340 of them, or 23 per cent., arose during that period. And 77 cases, or over 5 per cent., arose during the first year of life. This is the largest number in any year up to puberty. In those 77 cases the motor instability was so great, that it practically was exhibited whenever extra-uterine life began. No doubt in most of these 77 cases the epilepsy was very hereditary, and was associated with genetous idiocy or imbecility. It was an expression of a cortex bad and undeveloped in all its great functions, and entirely deficient as regards motor inhibition.

The next great period when the disease arises is puberty and early adolescence, in this respect contrasting markedly with insanity, which, as we shall see, is rare at puberty and early adolescence, but becomes very frequent indeed in the end of adolescence. Taking the age of thirteen as a common one for puberty to begin, Gowers found that the six years from that to eighteen produced 444 cases, or about one-third of the whole. Those years of early adolescence are the most deadly of all therefore. Then came the last seven years of adolescence, from eighteen to twenty-five, which produced 195, or only 13 per cent. of all the cases.

---

[1] *Epilepsy*, by W. R. Gowers, M.D.

It is clear from these figures that there are two great epileptogenetic periods, the first during the period of fastest brain growth from birth up to seven, and the next during the last period of slow brain growth but rapid development in the early reproductive period from thirteen to eighteen.

But we must look still further back than periods or eras of life to see why a brain becomes irregularly explosive. The heredity of epilepsy is markedly neurotic. From 28 to 35 per cent. have been the percentages that different authors have ascertained, the heredity being that of epilepsy itself, that is motor explosiveness in three-quarters (Gowers) of the hereditary cases. The evil quality seems to come from the mother to offspring of both sexes rather more frequently than from the father, in this not following the usual law of mental heredity, which is to cross the sexes, from mother to son, and from father to daughter. The stronger the heredity in epilepsy, the earlier does the disease appear, as is the case in all the neuroses.

Others of the neuroses abound in epileptic families. Rickets is put down by Gowers as "causing" 10 per cent. of the cases. Ordinary eclampsia during teething, chorea, infantile paralysis, asthma, somnambulism, as we have seen, morbid impulsiveness and temper, emotional perversion, morbid religious exaltation, perversion of feeling and action, dipsomania, and, above all, mental disease, are some of the neuroses with which epilepsy has close personal and hereditary affinity. In some counties in the south of England nearly one-fourth of the insane in the County asylums are epileptic, but it is not nearly so common as this in Scotch asylums. In Edinburgh only 8 per cent. of our insane are epileptic, while 22 per cent. of the inmates of the Larbert Institution for the congenitally weak-minded are epileptic.

We may conclude, therefore, that the tendency to motor explosiveness is an innate hereditary quality in epileptics, which eventuated into regular epilepsy at various stages of brain growth and development as the brain substance and its qualities were evolved. Instead of looking on the very commonly assigned mental exciting causes of the disease, such as fright, anger, and shock, as being real causes, I look on them in most cases as only proving the innate instability of the quality of the mental cortex, as well as the motor cortex. Unscientific, like scientific human nature, is always searching for the causes of phenomena. A distressed mother finds a certain satisfaction, if not a comfort, in assigning her child's malady to the sort of fright or shock, to which, as we all well know, most children are subjected often enough with impunity, but we must look far beyond such casual exciting causes of the first fit. The regularly recurring periodicity of the disease, which is one essential characteristic, is not at all explained by such "causes."

Recently Bevan Lewis[1] has, in his chapters on the Pathology of Mental Diseases,—chapters that mark an era in brain pathology,—stated that he does not agree with the "widespread community of opinion, that the pathological anatomy of epilepsy, whatever it be, is the expression of a grave nutritional disturbance of cell protoplasm, a nutritive disturbance which will not express itself in palpable morbid change even to the higher powers of the microscope. From this opinion we must dissent; for it appears to us that a morbid appearance of the cortical cell does exist of a highly characteristic nature, when the cortex is the subject of examination by the fresh methods of research."[2] When he comes to describe the actual pathological appearances in the brain tissues of epileptics, however, he does not point out any morbid change that is confined to epilepsy. The vacuolation of the cell nuclei, and afterwards of the cell which he describes, and was the first to describe, cannot be said to be peculiar to epilepsy. Dr Middlemass, the present pathologist to the Royal Edinburgh Asylum, working by Dr Lewis's fresh methods, finds this condition of vacuolation in many of the chronic forms of insanity, and, curiously enough, he had not found the condition very marked in any of the four epileptics whose brains he has examined here. It is to be kept in mind that the morbid appearances found in the cell protoplasm of an epileptic dement of twenty years' standing do in no wise explain how the original want of motor inhibition arose. Just before and during every epileptic fit there must necessarily occur, amongst other things, a sudden transformation of energy in the motor cell. No post-mortem gross change can explain this. As showing the extreme care needed for a scientific deduction on such a subject, I subjoin first a sentence from Lewis, who has of all living men except, perhaps, Meynert done the most and the best pathological work in this department, and then shortly relate two cases of epilepsy, with some of the appearances found in the brain of each after death. After describing the vacuolation and destruction of the cell nucleus he says—"It is interesting to observe the persistence shown by the nerve cell despite the degenerative changes in its nucleus, and it is only later in the stage of dissolution that the cell protoplasm betrays evidence of degeneration."

T. C. became epileptic sometime from fifteen to seventeen, and insane at eighteen. He showed the typical irritability and violence coming on in relation to the fits, which he took in large numbers together every few weeks. The use of the bromides diminished but did not stop them. As years went on his speech

---

[1] *Text-Book of Mental Diseases*, by W. Bevan Lewis.

[2] *Ibid.*, p. 322.

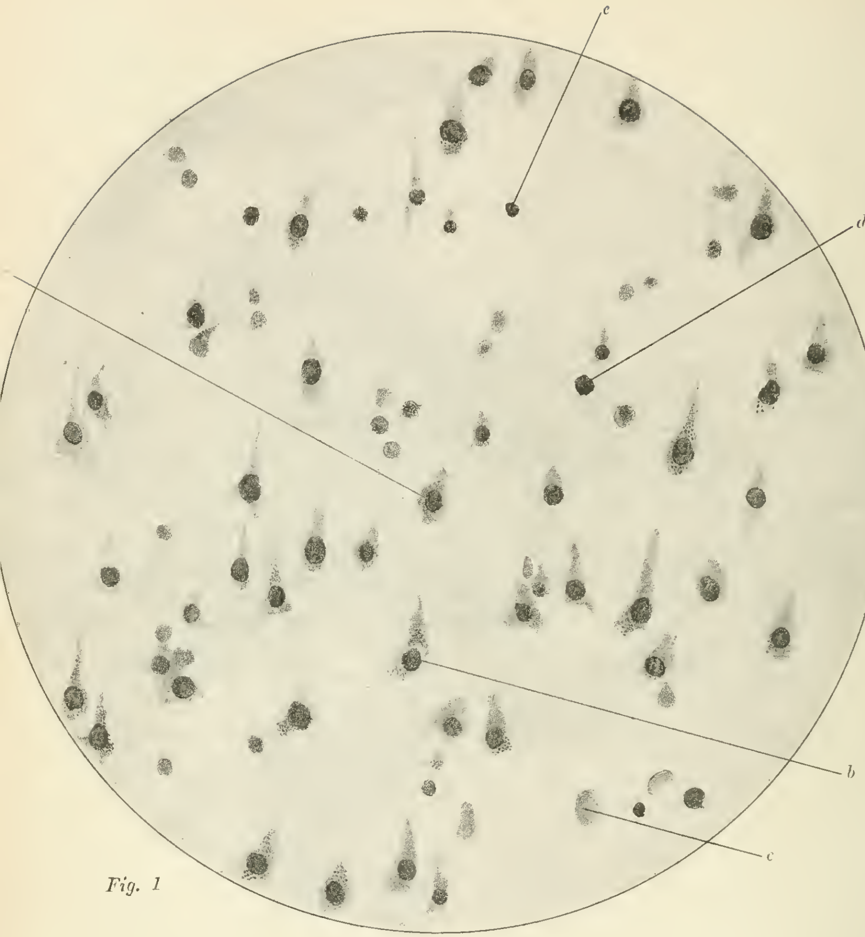


Fig. 1

× 300

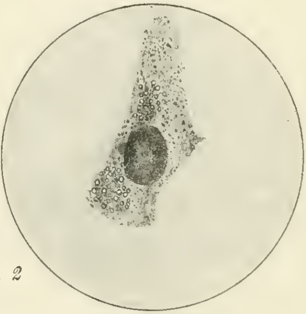


Fig. 2

× 650

CATHIE LITH

became slow and indistinct. It was a typical paretic, not an inco-ordinated nor a convulsive speech. During the last three years of his life he was very demented, very weak, and generally paretic, and took several bouts of fits, with prolongations of the *status epilepticus* so severe that his death seemed imminent. He died at last, after such a bout of fits. After death the following post-mortem appearances were found. The description and drawing (Plate IX.) are by Dr Middlemass.

The pathological conditions found on examination of the brain of the above case of T. C. were very interesting. The skull-cap was slightly denser than normal, and just below the frontal eminences there were a few small rounded bony projections of the inner table. These were more marked on the right side than the left. The dura was slightly adherent to the skull over the frontal region, but otherwise presented a healthy appearance. The brain as a whole weighed 42½ oz., of which the cerebellum weighed 3 oz., and the pons, medulla, and ½ in. of cord 1 oz. The two hemispheres were slightly adherent anteriorly, but the pia did not appear thickened, and was not adherent to the gray matter of the cortex. The convolutions were well formed, and did not present to the naked eye any appearance of atrophy. On section nothing of a morbid character was seen.

Fresh sections were made from Broca's convolution, and from the inferior frontal convolution, according to Bevan Lewis's method, and stained with aniline blue-black. On microscopic examination there was found to be a slight thickening of the deeper layer of the pia mater, forming a network of very delicate fibres. In the outer layer of the gray matter there was a considerable number of spider cells, the nuclei being deeply stained, but the protoplasm very faintly so. Similar spider cells were also found in the deepest layer of the cortex, and in the adjacent white matter. The most interesting change, however, was found in the nerve cells of the second and third layers. On first examination the most prominent objects were the rounded or oval nuclei, which had taken on the stain very deeply. Under a low power these seemed to be all that represented the nerve cells proper, but with the high power there could be seen a small quantity of protoplasm round each darkly-stained nucleus. It had taken up the stain only to a very slight extent, and hence was not readily visible. The appearance they presented is intended to be represented in the accompanying Plate (see Plate IX.), which is a drawing of a section from the left inferior frontal convolution. What was left of the cell protoplasm (Fig. 1 *a*, and Fig. 2) appeared to be composed of numerous minute rounded refractile colourless granules, some of the cells in addition containing a number of pigment granules at one or other side of the nucleus. The protoplasmic processes of the cells were completely gone, the truncated apex process (Fig. 1, *b*) in some being all that was left to indicate their previous existence. There could also be seen one or two masses of protoplasm without a nucleus (Fig. 1, *c*), and some nuclei destitute of cell protoplasm (Fig. 1, *d*). The nucleus, as already stated, was very deeply stained, rounded or oval in shape. Under a very high power the staining was seen not to be quite uniform, several small rounded or crescentic portions being slightly less deeply stained (Fig. 2) than the rest. This did not in the least resemble the appearances presented by vacuolation of the nucleus. Indeed, this condition of vacuolation of nuclei was present in only one or two cells out of several sections. The above changes affected only the cells of the second and third layers, those of the deeper layers being in different, but not advanced, stages of granular or pigmentary degeneration. The nuclei of the neuroglia cells were not increased in number, and presented a healthy appearance (Fig. 1, *e*). As regards the vessels, there was a slight increase of the nuclei of the adventitial sheath, and here and there a small quantity of pigment in the perivascular sheath.

In transverse sections of the upper end of the medulla, the large nerve cells showed very distinct evidences of pigmentary degeneration, but none of them presented the peculiar appearances of the nerve cells of the cortex.

Thus in this typical developmental epileptic we had a pathological condition precisely opposite to that described by Lewis as characteristic of epileptic insanity. The nuclei were large and showed no marked change, with no signs of vacuolation in any of them, and the cell itself had degenerated, and was largely disappearing, while there were present the spider cells, the absence of which, Lewis says, is so marked a feature of most of his cases of epilepsy, and which separated them so distinctly from the cases of general paralysis and alcoholism. The appearance of the cells in T. C.'s case rather resembled those of an epileptic idiot described by Lewis in *Brain* for 1879, p. 371.

The next case was that of J. M., who became epileptic at thirteen, and took the fits more and more frequently, his mental powers going steadily downhill, until for about three years before death he could scarcely be said to exhibit any higher mental power at all. He had no wants, no desires, no affections; he could not reason, he had no power of attention, and no memory, and he never spoke. I used to show him to my students as the most perfect and the most extreme example of the complete dissolution of mind and speech through epilepsy I had ever seen. His speech had not disappeared through paresis or any want of articulating power, as in T. C.'s case, but apparently through the disappearance of mind, so that there were no ideas, and no wants to express, as in extremest dementia. He simply sat all day taking no notice of anything. At last, at the age of thirty, he died of sheer exhaustion. There was considerable general brain atrophy, and on microscopic examination of the convolutions there was seen much pigmentary and granular degeneration of the large motor cells, but not to an extreme degree, nor by any means universal, and we could find only one cell with a small vacuolation in its nucleus. In fact, considering his very frequent fits, total dementia and speechlessness, the result of the microscopic examination was utterly unsatisfactory as an explanation of the symptoms during life. I have seen many cases of chronic melancholia not much demented, of mild senile insanity, and many active-minded chronic maniacs, whose brains showed much more cell degeneration after death.

As a very typical case of developmental epilepsy, in heredity, in its relation to other neuroses, and in the course of its mental and bodily symptoms, I relate the following :—

Y. Z — Paternal grandfather drunken and then insane. Paternal grandmother violent in temper, eccentric, and became epileptic at seventy-one. Of the paternal granduncles two were insane. A maternal uncle of father epileptic at forty, and a paternal uncle was dishonest and untruthful. The father during infancy suffered from nightmare, night visions, and convulsions at teething, but grew up strong and healthy in mind and body. The mother had a brother who was drunken and dishonest, and the mother herself was drunken. Almost every form of deficient mental and moral inhibition was thus found in the ancestry.

The patient was kindly, dishonest, untidy, untruthful, wanting in power of attention, and quarrelsome. He had no fits at teething, or any severe children's disorders. But lack of mental controlling qualities was very evident. At fourteen he took his first fit after a violent quarrel with a relation, and he has taken fits regularly ever since every few weeks, being often impulsive, violent, delusional, and maniacal after them, and he is now, at eighteen, gradually getting childish and demented, and has not developed in body, being still boyish looking.

Hysteria.

I bring in hysteria between epilepsy and adolescent insanity, because I attach far more importance to the mental element in this disease than most authors seem to do. I must not be understood as meaning technical insanity when I refer to the " mental element." As every physician knows, mental symptoms occur in innumerable diseases apart from insanity, and it is a great pity these symptoms of cortical disturbance are not more carefully observed and more accurately described as an ordinary part of clinical recording.

In any study of hysteria one is met at the threshold by the difficulty of determining what symptoms, nervous and mental, together or separately, are to be reckoned true examples of the disease. Are we to go on Charçot's lines to look out for local anæsthesia and irregular motor symptoms chiefly; or are we to take perverted conduct and character, diminished control over the expression of the emotions, abnormal "feeling" of all kinds —sexual, reproductive, and uterine mental reflections,—in fact, the indeterminate and the abnormal in the nervous and mental life of a young woman, as most medical authors would do? I lately saw a young woman of twenty, with a direct heredity towards insanity (maternal grandfather), who had been delicate and anæmic since twelve, who had had slight hæmoptysis at eighteen, and who for six months had presented a train of symptoms of which the following were a part: —She had become whimsical, very much addicted to enlarging on her own feelings, changed in her affective nature, insensitive to the lesser moral obligations of duty in small things, such as obedience to her parents' wishes and a reasonable industry. She had developed absurd religious ideas of a subjective sort, such as that having "joined the church without giving her heart to God had destroyed her nerves," and so altered her appearance that every one looking at her could see this. She would not eat at times for a day or two, and could assign no reason for this. She would not micturate for more than a whole day, and not go to stool for several days, this being due to a perverted volitional effort. She would absolutely refuse to go to church one Sunday, and the next insist on going in the middle of the service. She would absolutely refuse to take the medicine ordered her because it was "hurting her nerves," while she would insist on having a former "bottle" because it "supported" her, both bottles containing the same substances differently coloured. She would at times refuse to go and see a doctor, and had to be put into the cab by force. When interviewed she would at first sit still, with her hands folded on her lap, and with her eyes looking down—a picture of modesty—and when pressed to speak, would say, "Let every one leave the room but the doctor," and then begin by asking if she might "confide" in him, and if he would keep "secret" what she was going to tell him. Then in a mock shamefaced way, with her eyes on the floor, she would say, "I'm sorry to say it has been all my own fault. I have brought it all on myself by my conduct. I've been very wicked" Expecting a confession of masturbation, from her mock modest manner, the doctor says, "But what is it you have done?" and finds that it is the not having "given her heart to God" when she joined the church that she means, or says she means. She describes many and wonderful nervous feelings, "jumpings" all over her body, "cracklings" in her nerves over her stomach, womb, and heart, and "emptynesses" in many places. Yet she declared she was not depressed, "not a bit," and spoke coherently. Her memory was good, and her control good continuously. She was undeveloped in body, very thin, pale, cold, and the colour of her skin of a leaden hue. There were no anæsthetic spots. Her menstruation was pretty regular, though scanty, and all the symptoms were aggravated just before the periods.

Now, here was an insane heredity, a threatening of pulmonary phthisis just before full feminine development of body; then, still before such development, a series of true mental symptoms which most physicians would have pronounced "hysterical" in their character. I had to admit that it was not a common type of mental disease, though there were abundant morbid mental symptoms present, and the girl was totally changed from her former and normal self. There was, in fact, a mixture of hysteria and insanity in the case, though most mothers would have been infinitely better pleased to have had it called hysteria simply. In regard to age the case was typical, being an adolescent in the latter stage of that period. There is none of the neuroses of development that appear so late as hysteria except adolescent insanity. In this respect the two diseases show their essential kinship; and this is, to my mind, one strong argument for considering hysteria as being in its essence a cortical disorder, probably taking its special form from functional disturbances in those mental cortical centres where the reproductive impressions are received from their organs, and where those impressions are brought into relationship with the innumerable emotions, desires, and volitional efforts that relate to reproduction or arise out of it. The higher mental cortex, as a whole, is the last of all the nervous centres to arrive at such perfection as the individual through heredity, education, and experience is capable of, and hence hysteria and insanity are the last of the developmental neuroses to appear. In the female sex reproduction is a much more dominant function of the organism than in the male, and has far larger, if not more intense relationships to feeling, judgment, and volition; hence when the heredity is towards the neuroses, and full and adequate development into this perfect type is handicapped thereby, the female becomes liable to this scourge of those of her sex who live in cities—hysteria—just when she should have emerged into perfect womanhood. The developmental power failed just when those extraordinarily subtle and complex relationships between organic sexual necessities and the highest emotional and social qualities should have been harmonized in the cerebral cortex to form the ideal woman. The combined capacities for intense affection, for great self-denial, for the worship of an ideal hero, and for the true and perfect modesty of the perfect woman, fail to be attained at the right time or become contorted, so that we have the perverted affectiveness, the useless self-tortures, the grotesque ideals, and the mock modesty of the hysterical adolescent of twenty.

The careful study of the mock modesty of the hysterical young woman reveals on what a complicated basis of bodily and mental function stands the most delightful, attractive, and necessary of all woman's graces, viz., feminine modesty. The social needs and restraints of modern civilized life in our more educated classes unite with subtile hereditary nervous defects to make hysteria so common as it is, and they will probably make it more common still, until we devise such conditions of life and such a mode of education for our young women during their development that will be antagonistic to both these sources of hysteria and insanity. To counteract neurotic heredity will be undoubtedly one of the great problems of the preventive medicine of the future.

Out of 781 cases of hysteria referred to by Landowzy and Briquet, 612, or 78 per cent., occurred before twenty-five years of age. Two hundred and sixteen cases occurred before fifteen, and only 169 cases after twenty-five.[1] It is, therefore, to a very large extent a disease incidental to the period of development, though it is not confined to that period of life. The most typical cases of this multiform disease are undoubtedly found in this period of life, and they arise in patients of the neurotic type. Though many of the motor and sensory symptoms of hysteria can best be explained by considering them due to disordered function in the basal ganglia, especially the corpora striata and optic thalamus, yet its mental symptoms must be referred to disordered working of the cortex. The psychological relations of hysteria have not at all received the attention they merit. There are some cases of hysteria that are neither more nor less than mental cases in nine-tenths of their symptoms. The relationship of hysteria to the other neuroses of adolescence is very constant hereditarily and in the same person at different times of life. Certainly, its connexion with adolescent insanity is very common, for in half the cases of this disease in young women I find there are "hysterical" symptoms present at some stage of the disease or preceding it. My experience must be that of many physicians in finding that most cases of insanity in the young women of the richer classes of society are in their earlier stages called "hysteria." I fancy many of our profession in good practice must have many qualms of conscience in thus yielding to a natural maternal prejudice in their nomenclature of disease. Hysteria is also very commonly mixed up with epilepsy and with chorea. It has in 77 per cent. of the cases a neurotic heredity, that being in by far the greater number of cases a direct heredity of hysteria in the parents. But in the ancestry of the 351 hereditary cases there had occurred insanity, epilepsy, convulsive maladies, and many other neuroses. I do not know of any of the neuroses so hereditary as hysteria, and none more mixed with other neuroses in the same families. The so-called

---

[1] *Dictionnaire Encyclop. des Sciences Méd.*, art. "Hystérie."

Hystero-epilepsy of Charcot I look on as a convolutional disease fully as much psychical as motor in its character. This is not the place to enter on the vexed question, but I have had many adolescents, partly insane, partly hysterical, and all most liable to "suggestion," whom I am convinced I could in a short time have made into about as good subjects of hystero-epilepsy as any of the Salpêtrière cases by a few cliniques before students. I always adopted the plan of treatment by studied neglect, by muscular work, by fresh air, by tonic moral treatment, and by unstimulating diet, and my cases mostly got quite well in a few months, except a very few that became maniacal and ultimately passed into the secondary dementia of adolescence.

Description of Plate.

Plate IX.—Fig. 1.—*a.* A Nerve-cells howing well-stained nucleus, with small amount of protoplasm round it. *b.* Nerve-cell showing remains of apex-process and granules of pigment in protoplasm. *c.* Mass of cell-protoplasm without nucleus. *d.* Nucleus of nerve-cell, apparently destitute of protoplasm. *e.* Nucleus of neuroglia-cell. × 300.

Fig. 2.—A nerve-cell showing granular condition of protoplasm, collections of pigment granules, irregular staining of nucleus, and atrophy of protoplasm and processes. × 650.

(*To be continued.*)

III.—NOTE UPON NINE CASES OF ACCIDENTAL VACCINATION.

By R. W. Felkin, M.D., F.R.S.E., Lecturer on Diseases of the Tropics and Climatology, Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh, 13th May* 1891.)

Perhaps I ought to apologize for bringing before the Society such a simple subject as that of accidental vaccination, more especially as I simply wish to call attention to a number of cases which I have seen during the past few years.

The first case was that of a woman, T. S., aged 25, whom I saw on the 8th of November 1883 with the late Dr Moinet. The woman complained of a sore upon her left labium. I failed to recognise its character, but Dr Moinet told me that it was a case of accidental vaccination, and on inquiry we found that her child had been vaccinated a fortnight previously. The woman's right index finger was also vaccinated, and I had not been shown it at first.

Case II.—B. M., aged 20, I saw on the 14th of Dec. 1883. She was vaccinated accidentally at the outer angle of her left eye, which she subsequently lost.

Case III.—L. T., a young man, aged 22, whom I saw on 28th January 1884, was accidentally vaccinated on his left cheek just at the side of his nose. His explanation was that when playing with his sister's baby, who had been recently vaccinated, it had scratched him.

CASE IV.—L. M., aged 33, was seen on the 17th of March 1884. She had been accidentally vaccinated on the left breast near the nipple. She was at the time suckling a child who had recently been vaccinated.

CASE V.—J. B., aged 28, came to me on the 6th of April 1890 and complained of a sore upon his buttocks. I had vaccinated his child 16 days previously. On examining the parts I was surprised to see a very large area presenting well-marked vaccine vesicles. His explanation of the occurrence was that having chafed himself in riding he had used some vaseline from a pot from which his wife was dressing the child's arm.

CASE VI.—S. P., a man aged 28, was seen at the Cowgate Dispensary on the 8th of January 1891. He was complaining of a sore lip, and this turned out to be a case of accidental vaccination. As in case No. 3, he said that whilst playing with his child, who had been recently vaccinated, it had scratched him.

CASE VII.—M. B., aged 8, Ashley Buildings, came to the Dispensary on the 26th of March 1891, with well-marked vaccination marks at the angle of her mouth and upon her cheek. I could obtain no history that she had been playing with a baby, but there was no doubt as to its being a case of accidental vaccination.

CASE VIII.—On the 2nd of April 1891, M. B. returned to the Dispensary to show herself, and brought with her another little girl, aged 8, M. P., Writer's Close, vaccinated in almost the identical spot.

CASE IX.—Mrs J. M'I., aged 26, Rae's Close, came to the Dispensary with her child, aged 6 months. It had been vaccinated 10 or 12 days previously, and she was vaccinated accidentally on the outer corner of her right eye. These last three cases I photographed.

I think that these cases prove that accidental vaccination is not so uncommon as one would expect, and I bring them forward in the hope that they may serve as a warning. When children are vaccinated their parents should be cautioned of the possibility of accidentally vaccinating themselves. I have seen several other cases of a like nature in dispensary practice in Edinburgh, but unfortunately I have not notes of them.

Drawings and photographs of all the cases were shown.

IV.—A FIRST SERIES OF TWENTY COMPLETED ABDOMINAL SECTIONS.

By D. Berry Hart, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery Surgeons' Hall, Edinburgh; Physician Royal Maternity and Simpson Memorial Hospital, Edinburgh; Assistant Gynæcological Physician, Royal Infirmary, Edinburgh; President, Edinburgh Obstetrical Society.

(*Read before the Edinburgh Obstetrical Society*, 13*th May* 1891.)

It is a most valuable custom, begun long ago by Sir Spencer Wells, for those who perform abdominal sections to publish their results. The great value of this is that we obtain an accurate idea of what is being done in this important department, and, above all, get the mortality and morbility of the work.

The first point one has to settle in such a record is on what principle to record one's cases. A very natural plan is to record separately the great classes of operations,—hysterectomies, ovariotomies, appendage operations, and so on. This has its advantages, as we now know that the mortality in such depends not on the fact of its being an abdominal section, but really on the nature of the tumour removed, and the method with which its pedicle has to be dealt. The mortality in hysterectomies may vary from ten to forty per cent., whereas that of ovariotomies and appendage cases may be very small. The indications for abdominal section have, however, so much extended that I have in my first series included all my completed cases, reserving my merely exploratory ones for a separate communication, as mere exploratory incision has in itself practically no mortality. By bringing all my completed cases into one series I raise the rate of mortality, but it is at any rate free from any suspicion of statistics dependent on a classification that collects the successes and excludes the deaths.

In regard to the method employed, it was based on the teaching of Lister and Keith. Lister taught his pupils the great importance of the clean touch and perfect asepsis, and always deprecated the use of the spray in abdominal cases. To his teaching I owe more than I can express. To Keith, however, is due highest honour from all gynæcologists. His teaching on abdominal section is marked by genius, and to him we owe most of our knowledge of the right technique of operative work. His insistence on the importance of careful peritoneal toilette and asepsis have done more than anything else to save life, and every worker in this field must feel personally grateful to him.

I give no details on method, as that is now well known, and has already been brought before us by Drs Macdonald, Halliday Croom, and Brewis, in their valuable papers.

It will be seen that the nature of the cases is varied. In the eleven ovariotomies and parovariotomies, seven were simple and four difficult.

TABLE OF TWENTY COMPLETED ABDOMINAL SECTIONS.

Ovarian, Parovarian, and Ruptured Ovarian.

No.	Date.	Diagnosis.	By whom sent.	Remarks.	Result.
1	Feb. 6, 1886	Multilocular ovarian	New Town Dispensary	...	R.
2	Aug. 6, 1886	,, ,,	Dr N. L. Walker	...	R.
3	Sep. 29, 1886	,, ,,	Prof. Grainger Stewart	...	R.
4	Mar. 9, 1887	,, ,,	Dr Altham	...	R.
5	Sep. 16, 1887	Parovarian	Infirmary	...	R.
6	Ap'l 11, 1889	,,	Dr Graham	...	R.
7	Aug. 28, 1889	Multilocular ovarian	Infirmary	...	R.
8	Mar. 24, 1890	,, ,,	Dr Altham	...	R.
9	Aug. 15, 1890	Ruptured ovarian	Dr Spence	Drained	R.
10	„ 15, 1890	Ovarian	Infirmary	...	R.
11	„ 24, 1890	„	Dr Benny	...	R.
12	Mar. 28, 1891	Dermoid	Dr Garland	Drained; many adhesions	R.
13	Ap'l 11, 1891	Ovarian	Dr Keddie	Very large; many adhesions; drained	R.
14	„ 11, 1891	„	Dr Wyse	Omental and intestinal adhesions; drained	D.

Uterine Appendages.

15	Oct. 11, 1887	Appendages	...	Intolerable dysmenorrhœa and menorrhagia	R.
16	Sep. 9, 1889	,,	Dr Smith, Mid-Calder	...	R.

Broad Ligament.

17	April 2, 1891	Small broad ligament	Infirmary	...	R.

Hysterectomies.

18	Mar. 25, 1888	Narrow pelvis	Dr S. Stirling	Cæsarean Sect. (Porro)	R.
19	Ap'l 29, 1890	Broad ligament cyst	Dr Troup	Uterus removed	D.

Ruptured Fallopian Tube Gestation.

20	Ap'l 19, 1886	Ruptured tubal gestation	Infirmary	Drained	R.

The first complex case was one where the cyst had ruptured for several months. There was a large amount of free fluid, and on deep pressure a more solid portion. On opening the abdomen the stickiness of the free fluid made the nature of the case evident, and on passing my finger to the more solid portion it passed through a rounded hole about the size of a shilling into the cyst. Careful sponging and drainage led to a perfect and uninterrupted recovery.

In a second (Case 13) the tumour was exceedingly large. On opening the abdomen, complete adhesion to the anterior wall was found. The adhesions were carefully separated, mainly by sponging, and when the operation was completed there was considerable collapse. The abdominal wall was raw and oozing, but without points for ligature. She speedily rallied under stimulation, was drained for five days, and made an uninterrupted recovery.

The third difficult case, and the only fatal one in this section, had some omental and intestinal adhesions. What gave me concern was, however, the passage of some of the cyst fluid into the abdomen when the cyst was tapped. The fluid was thin, the cyst wall collapsed quickly, and thus some escape happened. I made a very careful peritoneal toilette and drained. On the third day, however, some distension began in the region of the ascending colon; the patient's pulse went up almost at once to 140, and she died on the fourth day. At the post-mortem, peritonitis was found around the ascending colon, and there was pus in the pouch of Douglas. The woman was not in good health, and had mitral stenosis; but it is possible that some fluid passed behind the cæcum and set up mischief despite continued drainage. One of these sections was a small dermoid with torsion of the pedicle, and entirely adherent.

In all the ovariotomies I tied the pedicle with silk and used the Staffordshire knot.

For diseases of the uterine appendages there were only two operations. In both the indications were the same—severe dysmenorrhœa and menorrhagia—and in both the cure was perfect. There is now no doubt that the removal of ovaries and tubes in well selected and long observed cases is of the greatest value.

The only other case I wish to comment on is one of a broad ligament cyst so inseparably connected to the side of the uterus that I had to remove the uterus by the supra-vaginal method. This was the second death in the series, and was undoubtedly due to the unfortunate necessity for hysterectomy. In four of the cases drainage was employed, and proved of the greatest service. In Case 14, however, it was less valuable than I thought, and misled me as to the amount of effusion.

Of the other cases, that of Porro's operation and one of ruptured Fallopian tube gestation are rare and of interest, but I have elsewhere commented on them.

In the successful cases there were no complications except in two, where there were stitch abscesses. I thought that in one there had probably been blood effused in the abdominal muscles from the needle penetrating a vein, and that this had suppurated.

In conclusion, I have to thank the House Physicians at the Buchanan Ward for their valuable aid, and especially Professor Simpson for his valuable teaching and advice.

V.—A PECULIAR CASE OF MALFORMED HEART.

By Walter Dickson, M.B. Edin., Clayton Hospital, Wakefield.

On the 1st of January a woman, aged 43, was admitted to the hospital complaining of severe pain in the abdomen. There was considerable tenderness over the liver, which seemed slightly enlarged, and she admitted that for some time she had been addicted to alcohol in excess. There was no abdominal distension, and scarcely any tenderness outside the right hypochondriac and upper epigastric regions. There was no trace of dropsy, but the lips and ears were just distinctly cyanotic. The nose was short, thick, and rounded, and the lobes of the ears were large; but the fingers presented no signs of clubbing, and were rather well formed. The pulse was regular, generally of normal frequency, small in volume, and compressible.

When examining the heart the most striking peculiarity was found on auscultation, when a very intense double murmur, loud and sawing, was communicated to the ear; this was heard very distinctly all over the cardiac area in front.

On the afternoon of the 6th of January, after indications of failing circulation, she rather suddenly died. At the post-mortem examination the liver was found completely bound by perihepatitis to the diaphragm and parietal peritoneum. The heart was in many respects a very extraordinary one. It was enveloped by a very much thickened pericardium, and the pericardial sac was quite obliterated. It weighed 17½ oz. The right auricle was large and dilated and filled with blood-clot, while there adhered to the walls a thick tough layer of blood-stained fibrin. There was no right auriculo ventricular opening, and no indication of one. Indeed, the floor of the auricle, at the site of the absent valve, was pretty thick, and seemed largely muscular.

Neither superior nor inferior vena cava opened into the right auricle. The only large opening was one into the ascending part of the arch of the aorta, and it was situated toward the left and most anterior part of the auricle, and practically bounded in that direction what would have been the auricular appendix. The boundary of the opening was formed by an elevated fibrous margin, more or less thin at the edge, thicker toward the base, and nodulated at parts, like the adjacent aortic walls, by small patches of atheroma. The opening was somewhat triangular with the base below, and from the middle of the base to the apex was fully 1 inch in extent. The base of the opening, at its central part, was ⅛ inch above the point of junction of the anterior and right posterior sigmoid valves of the aorta.

The only other opening of any size was one in the position of that of the coronary sinus; it would freely admit a large crowquill. A probe introduced passed freely, finally communicating with a chamber formed by the junction of the superior and inferior cavæ, which chamber passed deeply at the inner side of and at a lower level than the right auricle, to open directly into the right ventricle. There was no deficiency in the inter-auricular septum.

The whole cavity of the auricle was dilated, and gaped widely when incised. It measured at the widest part, from a point posteriorly to a point just below this auriculo aortic opening, 3¼ inches.

The wall of the right ventricle varied from ⅙ to ¼ inch in thickness, and the muscle seemed pale. The region of the infundibulum,

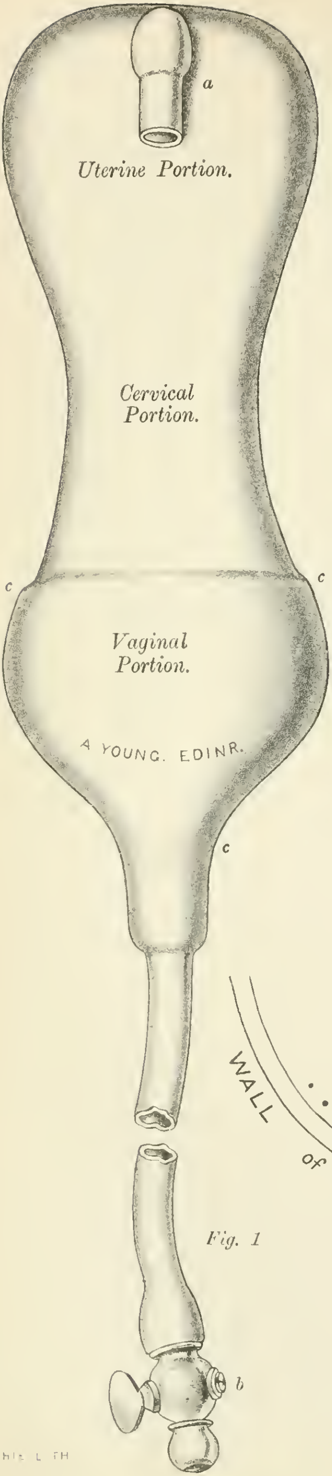


Fig. 1

Illustrations to Mr Keiller's Paper on his Modified Caoutchouc Dilators

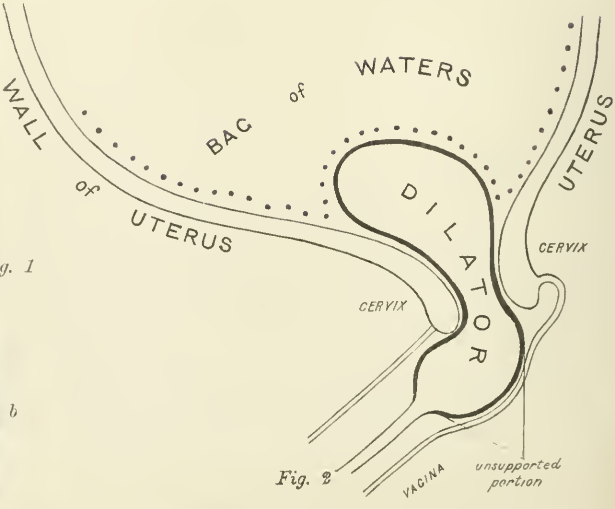


Fig. 2

ATHIE LITH

the pulmonary artery and its valves, seemed perfectly normal; the inter-ventricular septum very thick and strong, and in no way deficient. On the ventricular side there was no indication of an auriculo ventricular opening, but instead the united venæ cavæ, as alread ynoticed, discharging into the posterior part of the ventricle, at a plane considerably lower than that of the pulmonary orifice. When the finger was passed into the cut end of the inferior cava and directed upwards, it passed into the cardiac orifice of the superior cava; and then the finger, when directed down, went downwards and forwards into the right ventricle. At this ventricular opening a "tricuspid" valve existed, with at any rate two complete cusps. There were shreds of decolorized fibrin adherent at the apex of this right ventricle.

The walls of the left ventricle were hypertrophied, and at one part $\frac{7}{8}$ of an inch in thickness. The mitral valve seemed normal, excepting one or two small plates of atheroma. The aortic orifice was stenosed and the valves slightly incompetent, and from the junction of two of the valves projected a long fusiform vegetation. There was nothing noteworthy in connexion with the left auricle. The aorta was extremely atheromatous, and so dilated that at the transverse part an aneurism was formed of such size as to have easily encircled one's wrist. On this there were three secondary sacculations, one of which was directly in contact with the trachea, but did not appear to have affected it.

VI.—NOTE ON SOME MODIFICATIONS OF BARNES' CAOUTCHOUC DILATORS.

By William Keiller, F.R.C.S. Ed., Lecturer on Anatomy, Edinburgh Medical School.

(*Read before the Obstetrical Society of Edinburgh*, 13*th May* 1891.)

Recent use of the caoutchouc dilators in the induction of premature labour led me to modify them as follows, namely:—

1. By reducing the pouch or eye intended to facilitate their introduction to such a size that it fits the point of a uterine sound (*a*, Fig. 1). I have thus so lessened the bulk of the smallest bag that it can readily be passed into the cervical canal as soon as that will admit the index finger. The pouch for catching the sound is short and readily cleaned, and with ordinary care need not become a means of conveying septic matter. In Steele's bag the button at the end adds considerably to its size, and the long tube for receiving the sound and other crevices are liable to lodge septic matter.

2. The bags at present have a stopcock ground to fit into an adapter, which may be substituted for the nozzle of a Higginson's syringe. Instead of this I have fitted them with a stopcock

having a bulbous enlargement (*b*, Fig. 1), so that they may be attached by a piece of rubber tubing to the syringe nozzle, no special adapter being necessary.

3. I have strengthened that part of the bag which when it is *in situ* lies outside the cervix uteri (*c*, *c*, *c*, Fig. 1).

When in use the bag consists of three portions—

1. A part in the uterus, surrounded by the uterine walls and membranes.
2. A part in the cervical canal, surrounded by the tissues of the cervix, which the bag is intended to aid in dilating.
3. A part in the vagina, surrounded by the vaginal walls, except towards the vaginal outlet, where it is free (see Fig. 2).

Dilatation of the intra-uterine part will increase the intra-uterine contents and pressure, and the bag being surrounded by the uterine walls and waters, its dilatation will be pretty equally resisted all over. Dilatation of the vaginal portion will tend to raise the uterus out of the pelvis, but being unsupported towards the vulva, the bag will tend to get over-distended in that direction.

Dilatation of the cervical portion is resisted by the cervical tissues; this, therefore, remains less distended than either of the other parts.

The effect of each uterine contraction will be to force fluid from the intra-uterine into the intra-vaginal portion of the bag, and to distend especially the unsupported segment of the vaginal portion.

The bags act,—

1. As uterine irritants, the irritating elements being the sudden increase in the uterine contents, the presence of a foreign body in the uterus and vagina, and the separation of the membranes which their introduction implies.
2. As cervical dilators; and here I would call attention to some points.

Lying on the table, and distended with fluid, the bags will assume such a shape that every portion of the wall will be equally stretched against its power of elastic recoil; but if part be grasped by a foreign body so as to be less distended than the rest, the unsupported (and more distended) part will exert a force on the grasping substance equal to the difference between the tension of the two parts of the bag.

Uterine contraction will dilate the vaginal portion of the bag or dilate the cervix; if the vaginal portion be undilatable, the whole force of the uterine contractions will be exerted on the cervix. (I leave out, of course, the part that the thinning out of the lower uterine segment by elongation has to bear on cervical dilatation.)

In the usual form of bag the effect of a pain is simply to over-distend the unsupported segment of the vaginal portion; and when the pain passes away the bag is as before—namely, the uterine and vaginal portions distended, the cervical portion grasped by the cervix, and the uterine and vaginal sections exerting between the pains their elastic force on the vaginal section and cervix, in proportion as they are more distended than it is.

With the modified bags the effect of a pain is that the whole increase of intra-uterine pressure is exerted on the narrow cervical ring; when the pain passes away, the intra-uterine portion keeps up a constant centrifugal pressure on the cervix as before; the vaginal portion of the bag remains unmodified throughout.

Should they be over-inflated, rupture in the usual form of bag would take place at the unsupported vaginal portion; in the modified form, in the cervical or uterine portion; it is, therefore, doubly necessary before using these to test their capacity by the syringe before introducing them. The fluid, of course, should be antiseptic or aseptic (say, boric solution or boiled water).

There are other elements in cervical dilatation besides the centrifugal pressure of the fluid contents of the advancing bag of membranes or caoutchouc substitute, such as the congested or œdematous condition of the cervix and the stretching and thinning longitudinally of the lower uterine segment. These, so far as I see at present, remain much the same in either case.

The dilators were made for me by Mr Archibald Young, instrument maker, Edinburgh.

VII.—THE NERVE-ENDINGS IN THE LABIA MINORA AND CLITORIS, WITH SPECIAL REFERENCE TO THE PATHOLOGY OF PRURITUS VULVÆ.

By J. C. Webster, B.A., M.B., Assistant to the Professor of Midwifery and Diseases of Women in the University of Edinburgh.

(*Read before the Obstetrical Society of Edinburgh, 14th January* 1891.)

Anatomy and Physiology.

There is, at present, an absence of unanimity in the statements made by various writers regarding the nerve-endings in the labia minora and clitoris.

The authority most often referred to during the last five years on the subject of the nerve-endings in the nymphæ has been Carrard. In his paper[1] he gives an account of his examination of several normal and of two hypertrophied labia.

In the normal cases he found only Meissner's touch corpuscles. They occurred in the papillæ, and resembled those found elsewhere in the body. He says nothing as to the frequency of their occurrence.

In the abnormal cases he found—(*a*) Meissner's corpuscles, somewhat enlarged; (*b*) globular terminal bulbs, with increased cellular elements; (*c*) a peculiar end-organ in the papillæ resembling, according to him, a nerve-ending found by Ihlder[1] in the tongues of certain birds.

---

[1] *Zeitschrift f. Gyn.*, Bd. x. s. 62.

Ballantyne's[2] examination of normal and hypertrophied nymphæ gave the same results, with the exception that he did not find in the latter the Ihlder-like bodies.

Other observers differ from these. Krause,[3] in a very elaborate paper, says that only the globular end-organs occur in the labia minora, and he expressly declares that the Meissner corpuscles are not to be found there.

Schweigger-Seidel[4] and Kölliker mention only the occurrence of Pacinian corpuscles.

As to the nerve-endings in the clitoris there is, likewise, a considerable difference of opinion. Klein[5] mentions the globular bulbs of Krause and Pacini's corpuscles. Frey[6] mentions only the globular bulbs. Kölliker[7] mentions the globular bulbs, the genital corpuscles of Krause, and Meissner's nerve-endings. (Carrard[8] wrongly states that Kölliker includes the Pacinian corpuscles among the nerve-endings of the clitoris, but not among those of the labia minora. Kölliker distinctly says that they occur in the prepuce, which is not a part of the clitoris, but the upward continuation of the nymphæ.)

It is difficult to understand why there should be such differences in the recorded results of men who are acknowledged to be accurate observers. The explanation must be found in one of the following suppositions. These authorities may, indeed, be perfectly accurate, and it may be that the external genitals differ from all other parts of the body, in that their structure varies in the most marked degree in different cases; it may be that too small a number of specimens have been examined, or that the methods of examination have not been sufficiently careful; or it may be that the exact nature of the corpuscles has not in all cases been determined.

The tissues in question are not at all difficult to prepare for microscopic examination, although the thinnest sections and the most careful differential stains are required in order to show clearly the terminal nerves and nerve-endings. For the complete study of the parts there can be no doubt that the examination of a large series of sections cut in paraffin is the only trustworthy method. In this way I have been able to examine many sections, transverse and longitudinal, both of the clitoris and labia minora.

Unless a *series* of sections be studied, error is very apt to arise

[1] *Archiv f. Anat. Phys. u. Wissenschaft Med.*, 1870, s. 238.

[2] *Obstet. Trans.*, vol. xiii. p. 179.

[3] *Archiv f. Mikroskop. Anat.*, 1881, p. 99.

[4] Virchow's *Archiv*, Bd. xxxvii. p. 99.

[5] Stricker's *Handb. d. Lehre v. d. Geweb.*, s. 660.

[6] *Compend of Hist.* (*Trans.*), p. 209.

[7] *Loc. cit.*, ss. 178, 180, 183.

[8] *Loc. cit.*, s. 65.

both as regards the form and number of any individual kind of corpuscle. If a few sections be chosen at random from a large number, it is not surprising that structures, of which only few exist, may be entirely overlooked. In this way, also, one sees merely the appearance of the body in one plane; in the serial method in several successive planes. By the latter method only can one estimate with any degree of accuracy the number of any given structure in a piece of tissue.

In my specimens I have found the following nerve-endings:—

1. In the Labia Minora:—

(*a.*) *Pacini's or Vater's Corpuscles* (Figs. 2 and 3).—These are few in number, and are chiefly situated in the upper part of the labia, near their attached edge, being found in the deepest layers of the chorium. Besides the single form ordinarily described, there occurred compound corpuscles—double and triple.

The double corpuscle is made up of two single bodies, each of which consists of a central core, surrounded by delicate concentric layers, and both enveloped in a common capsule, made up of several concentric coats. In a few cases I have found that the individual corpuscles are separate at one end, being bound together within a common sheath in most of their length.

The triple corpuscle consists of two corpuscles within a common capsule, and a third much smaller one situated in the substance of one of the larger ones between the central core and outer wall. These multiple forms have not, as far as I know, been demonstrated before.

In some corpuscles a single axis cylinder, and in others a double one, is seen in the central core.

(*b.*) *Krause's End-bulbs.*—These are the most numerous nerve-endings in the labia minora. They are found in the papillæ, though more frequently in the deeper layers of the chorium. They appear ovoid, oblong, or round in various sections.

In the prepuce and upper part of the labia are found what appear to be compound globular endings, consisting apparently of two single end-bulbs bound together. They occur only in small numbers. Whether or not these have any relation to Krause's genital corpuscles found in the clitoris, it is impossible to say.

There are conflicting opinions as to the part played by the labia minora in the production of the sexual sense, though, if Krause be right in connecting this sense with the genital corpuscles, it is limited to the clitoris.

(*c.*) *Wagner and Meissner's Touch Corpuscles.*—These occur but rarely, and are not so large as those found in the hands and feet. Krause denies their existence altogether.

It is probable that those observers who have described them as existing in considerable numbers have mistaken the ovoid or oblong end-bulbs of Krause for them. Such a mistake, easily enough made in thick or badly-stained sections, should not be made when more careful methods of examination are employed. A comparison either of longitudinal or transverse sections shows that there is a well-marked difference between the two.

Krause[1] refers especially to the sense of touch in these parts as being poorly developed, and associates this condition with the fewness of the touch-corpuscles and end-bulbs. The small number of nerve-endings in the papillæ of the nymphæ is very noticeable.

I have lately, in several cases, tested the tactile sense, and my results corroborate Krause's statement. According to Weber's test, by which one ascertains the distance at which two points can be recognised, it appears that the prepuce is more sensitive than the nymphæ, and the nymphæ than the labia majora and mons veneris. On the prepuce the shortest distance was about 1 cm., on the nymphæ about 1·25 cm., and on the labia majora about 4 cm.

As to the peculiar end-organ found by Carrard in the papillæ of hypertrophied nymphæ, and said by him to resemble a form found in the tongues of certain birds, first described by Ihlder, one can say that no such form exists in normal labia. On comparing Carrard's corpuscle with Ihlder's, there really appears to be very little resemblance. Carrard says that it is intermediate between a touch-corpuscle and an end-bulb. It is very likely that it is only one of these pathologically altered, and not a special form of nerve-ending.

2. In the Clitoris:—

(*a.*) *Meissner's Corpuscles*, few in number.

(*b.*) *End-bulbs.*

(*c.*) *Pacini's Corpuscles.*—These are few in number, and are situated in each half of the posterior part of the glans near the junction with the prepuce. They are mostly of the compound variety.

(*d.*) *Genital Corpuscles of Krause* (Pl. X., Fig. 1).—These are found especially in two groups, one on each side of the middle line of the glans, more abundant towards the upper surface. According to Krause's description of them they are of various shapes, *e.g.*, bean-, heart-, and mulberry-shaped, &c. It is probable that there are not, in reality, these various forms. There are certainly found sections with these varied appearances, but they would appear to be merely sections of corpuscles cut in different planes. Such a question can best be settled by the examination of a series of sections. Studied in this way the corpuscles seem to be irregularly rounded or oblong, possessing a fibrous capsule from which septa extend inwards, forming several more or less rounded compartments in which, among cells, wind the terminal nerve fibres.

Addendum.—That the labia minora are skin, and not mucous membrane, seems now to have been proven beyond dispute.

---

[1] *Op. cit.*, p. 79.

As an additional proof of this I mention the occurrence of sweat-glands. These I have found in the upper part of the nymphæ, near the "white line," and also in the prepuce at the line of junction with the side of the glans. In the former place they are well marked. In Fig. 5 is represented one of the convoluted glands with its duct in section. In the prepuce they are much more simple.

No mucous glands are found in any part of the nymphæ.

PRURITUS VULVÆ.

Among the less common affections of the female genitals there is no disease of which the pathology is more unknown, nor the treatment more unsatisfactory, than that which forms the subject of this paper. Under the heading of "Pruritus Vulvæ" the text-books include itching of the vulva of every form and degree, whether it be purely idiopathic or only the accompaniment or result of some other recognisable condition.

In Professor Simpson's very full account[1] of the disease, he mentions the following causes:—

1. Local.
   - Eruptive and inflammatory affections.
   - The drying of diabetic urine on the vulva.
   - The irritation of the part by discharges from uterus and vagina.
   - The presence of worms in the vulva and vagina.
   - Congestion of the vessels, *e.g.*, sometimes in pregnancy.
2. Reflex.
   - The presence of worms in the rectum.
   - Various diseases of the vagina and uterus.
3. Idiopathic.—Pathology unknown.

Most writers agree with this classification. Some say that gout is a cause; others, that disease of the ovaries may be a reflex cause. Those cases which occur apart from all apparent cause, Beigel[2] and others ascribe to unknown changes in the central nervous system. Jaggard[3] says that "Pruritus (apart from local causes) is a functional disease of sensation of reflex origin without structural alteration of skin." The latest explanation is that of Bronson,[4] according to whom "the disturbance in pruritus is of the nature of a dysæsthesia, due to the accumulated or obstructed nerve excitation, with imperfect conduction of the generated force into correlated nervous energy."

Such statements, made with all the assurance of certainty, are worthless, being mere assumptions unsupported by physiological or pathological evidence. They are scientific expressions of ignorance, and are the common resource of writers who delight in verbose and well-padded paragraphs, and who appear to believe that additional words mean additional facts.

---

[1] Quain's *Dict. of Med.*, p. 1767.

[2] *Handbuch der Frauenkr.*, red. von Billroth und Lücke, Bd. iii. s. 731.

[3] *Am. Cyclop. of Gyn. and Obst.*, vol. i. p. 478.

[4] Debate at N. Y. Neurological Society, Oct. 7, 1890.

Zweifel,[1] on the other hand, prudently says that it is unnecessary to seek for central purely hypothetical causes of pruritus.

It is not at all necessary to consider pruritus resulting from causes, local or reflex, which examination makes evident. The pathology of such cases is easily understood, and their cure effected by the removal of the cause.

Pruritus vulvæ proper, the condition in which there is a more or less constant feeling of itchiness in the external genitals, unaccompanied by any apparent pathological change, local or distant, capable of causing it, is a disease about which nothing is practically known.

All will agree that it is a most troublesome and unpleasant complaint, and that, when considered in relation to certain bad results which may follow from it, it is worthy of most serious consideration. Apart from local excoriations, eruptions, hypertrophies, and malignant disease, which may be set up by long-continued scratching, the habit of masturbation may be brought about, the patient's normal balance of mind may become greatly disturbed by the constant torture, and, indeed, sometimes complete nervous breakdown may occur.

As to the seat of itching in these cases very inexact observations have been made.

Zweifel[2] says that it is most frequent immediately around about the clitoris, while Küchenmeister[3] says that only the clitoris is in some cases affected. According to others, the mons veneris, the labia majora, the perinæum, the vagina, the anus, and surrounding parts may also be involved.

The reason of this inexactness is that the affected area is not often accurately marked out, the patient's statements as to its locality being taken as trustworthy; and also that care is not taken to distinguish between the itching resulting from the pruritus proper and that which follows irritation of the parts from scratching. It is well known that constant scratching will tend to make the sensation of itchiness felt over a wider area than the part which is actually the primary seat of the trouble. In this way patients' accounts may be very misleading.

In this connexion it may be interesting to refer to three cases which I have seen during the past year. Their histories are very much alike. Each patient complained of itchiness about the external genitals, having suffered for more than two years. They had been in the hands of various medical men, and had used locally many kinds of ointments and lotions without success.

---

[1] *Hand. d. Frauenkr.*, red. von Billroth und Lücke, Bd. iii. s. 307.

[2] *Op. cit.*, s. 305.

[3] *Oest. Zeitschr. f. Frekt. Heilkde.*, 1873.

In the first case seen by me I tried several applications that had not been used, including menthol; but after a couple of months the patient complained as badly as ever. I then examined the parts very carefully, and found that the seat of the pruritus was limited to the clitoris, prepuce, and upper parts of the labia minora, although the woman herself had complained of general itchiness of the pudenda.

The woman then explained that the itching was at most times strictly localized to the above-named parts, and that it was only after scratching—especially when warm in bed—that it was more widespread. In this case the clitoris and nymphæ were slightly hypertrophied.

In another case careful examination showed exactly the same condition, the nymphæ being somewhat more enlarged than those of the former case.

In the third case the same parts were the main seat of the itchiness; there was, however, some itching, in addition, in the labia majora, which completely disappeared after I stopped the use of an irritating carbolic oil which some one had ordered her. The primary trouble, however, remained as bad as ever.

Treatment.

At present the orthodox plan of treatment is to make the patient apply locally many lotions and ointments for months, until at last in despair she gives up and goes to some one else, who again puts her through the same weary round of washings.

These local applications include ice, cold water; acid, alkali, mercury, tar, chloral, tobacco, and chloroform lotions; ointments of opium, menthol, and belladonna, besides many others. Such methods of treatment must be acknowledged to result in nothing but failure. It would appear that, so far as our experience goes, the only way in which we can bring about a complete cure is by the *thorough removal of the affected parts.* In my cases, in which this method has been adopted, it has been very successful, while, also, the examination of the tissues removed reveals the existence of distinct pathological changes of such a nature as to make it extremely probable that they could only be removed by a radical operation.

The operation in each of my cases consisted in the removal of a spindle-shaped mass of tissue extending from half-an-inch above the clitoris as far down as a point midway between the glans and the urethral orifice. The removed portion consisted mainly of the greater part of the clitoris and the upper part of the nymphæ. The wound was closed from above downwards by a continuous suture of juniper catgut (No. 3). If only a small portion of the upper ends of the nymphæ require to be removed, the rawed surfaces may be brought together in such a manner that, after healing, scarcely any deformity can be noticed. In one case it was found that there was still some itching in the upper part of the remaining portions of the nymphæ. The removal of the affected areas resulted in a complete deliverance from the trouble.

In the review of the literature of the subject I have found but two accounts of the successful employment of such a radical form of treatment.

One, quoted by Carrard, is a short note of a case of pruritus limited to the clitoris, completely cured by the removal of that body.[1] The other is by Schroeder and Löhlein,[2] who reported five cases successfully treated by removal of the affected areas. In one of these the clitoris with its prepuce was removed; in another a small piece of the right labium majus; in another a large part of the left; in another the clitoris and part of both labia.

The removal of portions of the external genitals for other distressing symptoms has been carried out in a few cases. Carrard[3] reports two cases of hypertrophied nymphæ removed by Chrobak of Vienna, on account of great tenderness, accompanied by a feeling of heaviness between the legs and a desire to micturate. There was no pruritus. Ballantyne[4] also reports two somewhat similar cases operated on by Professor Simpson. In none of these cases was pruritus present. Sir J. Y. Simpson sometimes temporarily separated the affected portion of skin by a subcutaneous incision with a tenotomy knife.

In conclusion, it is clear that, as far as our experience goes, the removal of parts of the external genitals, even of the clitoris, for localized affections otherwise incurable is a justifiable and necessary operation, though, for obvious reasons, it should not be done without the full consent of the patient.

Pathology.

In none of the cases of pruritus collected by me was there an account of any microscopic examination of the tissues removed.

As regards the naked-eye appearances, there may be more or less hypertrophy, or none at all. As regards the hypertrophy in such cases, it is impossible to say whether it is to be associated with the primary pruritus or to be regarded as resulting from continued rubbing and scratching. It is not a constant factor. There are also many cases of simple hypertrophy without any accompanying itchiness.

The microscopic changes found in the tissues removed in my cases are of great interest, and were most probably the cause of the disease. These changes are of the nature of a slowly progressing *fibrosis*, affecting chiefly the nerves and nerve-endings of the clitoris and labia minora.

(*a*.) *Nerves* (Fig. 6).—Many of these, if traced from deeper parts towards their terminations, are seen to acquire a dense fibrous

---

[1] *Centralblatt f. Chir.*, 1874, s. 431.

[2] *Centralblatt f. Gyn.*, 1884, s. 805.

[2] *Op. cit.*, s. 62.

[4] *Edin. Obstet. Soc. Trans.*, vol. xii. p. 186.

FIG. 10

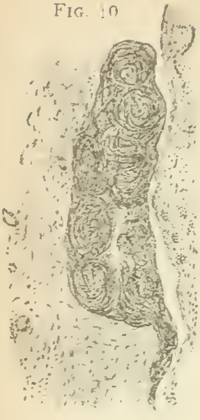


FIG. 9

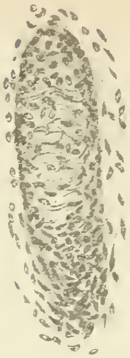


FIG. 8

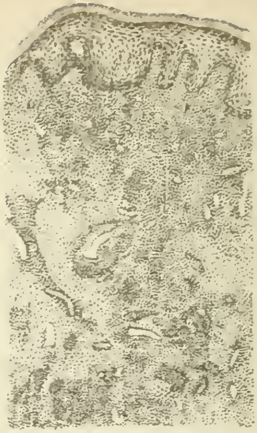


FIG. 7

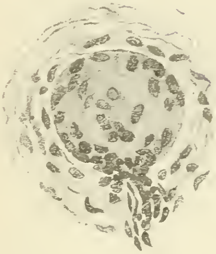


FIG. 6

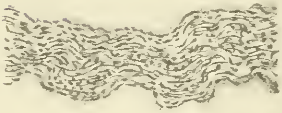


FIG. 4

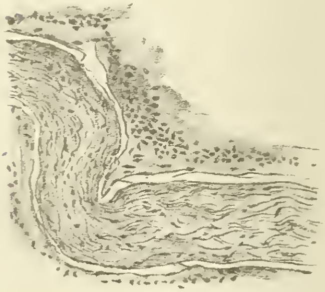


FIG. 5

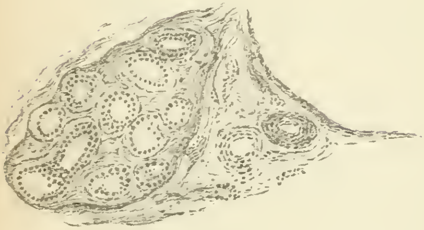


FIG. 1

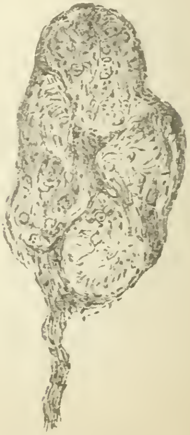


FIG. 3

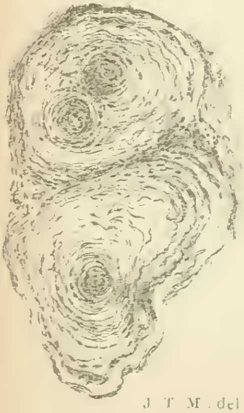
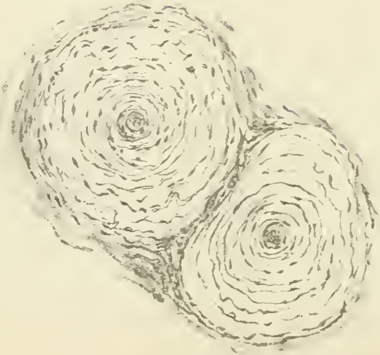


FIG. 2



J. T. M. del

character, some appearing as well-marked fibrous cords, the nerve-fibres being compressed or destroyed. In some cases they can be followed to their special end-corpuscles, which may also show the same changes. The changes are most marked in the clitoris.

(*b.*) *Nerve-endings.*—The Pacinian corpuscles do not appear to be affected, save in one instance where there is an abnormal number of cells in the central core. Some globular end-bulbs (Fig. 7) show an increased number of cells; others appear as dense fibrous knobs. Some of the genital corpuscles (Fig. 10) show the change in a marked degree, the windings of the terminal nerve fibres being often almost obliterated.

(*c.*) *The Connective Tissue Framework of the Clitoris and Nymphæ* (Fig. 8).—Here the changes found are different, being of a sub-acute inflammatory nature, and evidently more recent in origin than those found in the nervous structures. They are found most marked in the corium under the papillæ, and affect especially the prepuce and nymphæ, being found in the clitoris only in the glans under the epithelium, and much less marked than in the labia minora. In the corium of the latter are seen many minute vessels with abundant exudation of leucocytes into the peri-vascular lymphatics, while in many parts the sub-epithelial tissue is a mass of leucocytes and proliferating connective-tissue corpuscles.

These changes are most marked in the hypertrophied nymphæ. They are distinct from the chronic fibrosis affecting the nervous structures, and are, no doubt, due to the long-continued irritation of the scratching. They affect chiefly the superficial parts, viz., the prepuce and nymphæ, the nerve-fibrosis being most marked in the clitoris, in which there are only a very few acute or sub-acute changes under the epithelium covering the surface of the glans.

DESCRIPTION OF THE FIGURES.

1. Genital corpuscle of Krause. H. P.
2. Double Pacinian corpuscle. H. P.
3. Triple „ „ H. P.
4. Normal nerve of clitoris in longitudinal section. H. P.
5. Sweat-gland and duct of lab. min. L. P.
6. Fibrosis in a nerve in the glans clitoridis. H. P.
7. Globular nerve-ending with increase of connective-tissue cells and fibrosis of nerve-fibre entering it. H. P.
8. Section of lab. min., showing a great accumulation of leucocytes and young connective-tissue corpuscles under the covering epithelium, and exudation of leucocytes around vessels in the corium. L. P.
9. Fibrosis affecting part of a Meissner's corpuscle. H. P.
10. Fibrosis affecting one of Krause's genital corpuscles. H. P.

VIII.—INFECTIOUS DISEASE AND NOTIFICATION.

By F. P. Atkinson, M.D., Surbiton.

The object of notification is said to be to bring about a reduction of the death-rate by—1*st*, Getting information as to the existence of sanitary defects; 2*nd*, Learning the natural history of disease; but interest does not seem to be taken in finding out the cause or causes of all epidemic diseases alike, for certain of them are in many places excluded from the notifiable list, *e.g.*, measles, whooping-cough, epidemic influenza, chicken-pox, German measles, etc., though the two first are amongst the most fatal of all. Sanitarians generally are agreed that there are two points which are especially to be sought after, viz.,—pure food and drink for the stomach to absorb, and pure air for the lungs to breathe; and in order to obtain these it is above all things necessary to have both good drainage and good ventilation. Careful consideration brings me to the belief that all infectious diseases are, in the first instance, brought about by inattention to these matters, and are carried about to distant places by individuals and not by air. To say that all infection is due to existence of something which is in direct opposition to Nature's provisions and requirements is not more unorthodox than the notion that cholera was due almost entirely to sewage poisoned water, when it was first started. The action of the air is beneficent, and its free circulation has a tendency to destroy rather than propagate disease. It may be impregnated within a certain area with certain disease germs, but outside this area these gradually get subjected to the operation of the ozone contained in the atmosphere. Of course germs, it must be admitted, have various degrees of vitality; for instance, cholera, small-pox, and scarlatina may be conveyed to a distance by means of linen, etc., while German measles will only infect those in close proximity to the person affected.

We used, in the old days, constantly to hear of cholera being a visitation of Providence, of the way in which the air used to affect one place and pass over another close by, of the cholera cloud, etc., when we were ignorant of its real nature and cause; but since we have obtained a clearer insight into its origin, we laugh at the public for holding such absurd notions. At the same time we maintain the very same kind of views ourselves where we are ignorant of the real cause of epidemic disease. If epidemic disease be really due to certain vagaries of the air, of what use, I would ask, is notification? and if it be due, in the first instance, to sanitary defects, would it not be a rational method of procedure to correct these defects—in fact, to have a systematic house to house inspection—first, and so try and get a fair foundation upon which to work. Notification would then take its proper place, and tell us of any subsequent loose screws.

IX.—THE RELATIONS OF THE ABDOMINAL VISCERA IN THE INFANT.

By J. W. Ballantyne, M.D., F.R.C.P.E., Lecturer on Midwifery and Gynæcology, Medical College for Women, Edinburgh ; and on Diseases of Children, Minto House, Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh, 8th April* 1891.)

The conclusions with regard to the anatomical relations of the abdominal viscera in the new-born infant, which are stated in this communication, are founded upon the examination of seven full-time infants and one seven months' fœtus by the frozen sectional method, and also upon the simple dissection of several other infants. The method of investigation by means of frozen sections is now so well known that it is not necessary to describe it here ; but it may be said that in all the cases, save one, the infant was placed in the freezing mixture in the dorsal position. Drawings were obtained from the sections by means of gelatine plates.

The relations of organs and structures in the abdomen of the infant differ in several particulars from those found in the same region in the adult, and it is therefore very necessary that the physician, especially the pediatric physician, should have in his mind a very clear conception of the anatomy of the abdominal viscera in the infant ; and, further, this region must be of interest to him for the reason that children are particularly liable to diseases affecting the intestines, the stomach, and the mesenteric glands. A knowledge of the peculiarities of the abdominal viscera is also essential to the surgeon who may be called upon to operate for imperforate anus, for hernia, or for other abnormal conditions in the newly-born infant.

The comparatively small size of the face, thorax, and pelvis of the infant gives to the region of the abdomen the appearance of disproportionate largeness, but the abdomen is also really voluminous on account of the large size of the liver. It is not uncommon to find the abdomen pathologically enlarged in children from tabes mesenterica, ascites, distension of the bladder, etc., and among the specimens dissected by me there were examples of distension from ascitic fluid, from peritonitic effusion, from partly coagulated blood due to rupture of the spleen, and from splenic hypertrophy. One of the specimens of which frozen sections were made showed also an over-distended bladder, which caused an undue prominence of the lower part of the abdomen.

The palpation of the infant's abdomen reveals the presence of a hard, firm body projecting downwards from under the cover of the ribs to the level of the umbilicus. This body is the liver, and its large size must be borne in mind in palpating and percussing the infantile abdomen. The bladder, also, which is practically entirely an abdominal organ at birth, will, if distended, give a dull area in the hypogastric and lower umbilical regions.

At birth, and for fully a week afterwards, there is found attached to the abdomen the portion of umbilical cord left after ligature and section. The point of insertion of the umbilical cord into the anterior abdominal wall of the infant differs in its position from that found in the adult condition. It is usually stated that during the first two years of life the umbilicus occupies the central point of the body (M'Clellan, *Keating's Cyclopedia of Diseases of Children*, i. p. 30); but I have found it more commonly to be placed a little nearer to the feet than to the cephalic vertex in the infant. If the total length of the infant be 50 ctms., then the umbilicus will be distant from the vertex 27 or 28 ctms. As the child grows older, and as the legs lengthen, the central point of the body is found to coincide with the pubes. In its relation to the vertebral column, also, the umbilicus differs somewhat in the infant when compared with the adult. It is, in the normal infant, found to coincide in level with the disc between the fourth and fifth lumbar vertebræ, and to lie at or a little above the level of the highest point in the iliac crests. In the adult the umbilicus is situated opposite to the lower border of the third or the upper border of the fourth lumbar vertebra, and is, therefore, fully one vertebra higher than in the infant. In an infant with dropsy the umbilicus lay at the level of the first sacral vertebra; but in this case its low position was evidently due to the distended, slightly pendulous condition of the abdomen.

On the internal aspect of the anterior abdominal wall in the infant the component parts of the umbilical cord can be distinctly seen. The umbilical vein passes upwards in the falciform ligament of the liver, and sometimes shows a rounded swelling (containing blood-clot), about the size of a marble, in its course: the two arteries of the cord pass downwards to the bladder and diverge as the hypogastric arteries to join the internal iliacs, which in the infant appear as if they were branches of the hypogastrics; and the urachus passes downwards in the middle line to the apex of the bladder.

Certain outstanding peculiarities in the relation of the abdominal viscera are revealed when the abdomen is opened. The very delicate transparent character of the great omentum is noteworthy, but the most striking feature is found in the large size of the liver (Plate IV.) Roughly speaking, it may be said that the liver occupies nearly one-half of the abdominal cavity. Ribemont demonstrates its position and size as follows:—A plane passing along the inferior surface of the liver divides the abdomen into two compartments, pyramidal in form and nearly symmetrical. The one has its base above, occupying the right hypochondrium and the epigastric region, whilst its apex is turned towards the iliac crest of the same side; this compartment contains the liver. The other, with base inferior, and apex turned towards the posterior part of the left hypochondrium, contains the intestinal coils, the spleen, and the stomach. The liver extends vertically from the diaphragm to a point some millimetres above the right iliac crest, and from the right hypochondrium to the left in a transverse direction. Ribemont's description in the main agrees with what the dissections and frozen sections show; but I have not in any case found the lower limit of the liver to be so near to the right iliac crest as he makes it. Doubtless there are considerable individual differences in the size of the liver within the limits of health in children as in adults.

Upon the subject of the *form* of the liver the sectional method by freezing has thrown an immense amount of light. Dr Symington, in a masterly paper on the liver in the adult, read before this Society in the December of 1887, showed that most erroneous notions prevailed with regard to the form and surfaces of the liver. When removed from the body and laid upon a plate, the organ seems to have only two surfaces, an upper and an under; but when hardened by freezing and studied *in situ*, the liver at once appears with at least five surfaces. The liver may be roughly compared to a jelly made by a cook which has not set properly, and which when turned out upon a plate collapses: no one can tell the original form of the jelly from the flattened mass on the plate. As seen in frozen sections, sagittal and coronal, the liver is found to possess five surfaces—a posterior, pointed out by His in 1878; a superior; an inferior; and an anterior and a right, as demonstrated by Symington in his paper above referred to. The inferior surface is more correctly termed left inferior, for it is directed not only downwards but very markedly towards the left side. Now, these hepatic surfaces which are present in the case of the adult liver are all particularly well defined in the case of the infantile organ, and can be recognised with the greatest ease. Some of my sections have led me to describe a left surface in addition to the others, but I am not certain that this surface is constantly present in all infants.

Looking upon the liver, therefore, as a "right-angled triangular prism with the right angles rounded off," we find that it shows five, or in some cases six, surfaces. From the consideration of sagittal, coronal, and transverse sections of the abdomen, and from the subsequent building up the liver from the separate sections, the relations of the various surfaces can be accurately described. The *superior surface* (Plate I.) is in contact with the diaphragm, to which it is accurately moulded, and has therefore a general convexity with a local concavity immediately underlying the heart. One of my sections might appear at first sight to be opposed to this statement, for in that specimen the left portion of the superior hepatic surface is as high on the left as on the right side; but in that case there was a hypertrophied spleen, which had pushed up the liver on the left side. The superior surface is in infants very clearly marked off from the anterior surface, from the small posterior, and also from the left inferior surface; but the line of demarcation dividing it from the right surface is not so easily determined (Plate III.)

The *anterior hepatic surface* (Plates I. and II.) is a clearly marked one in the infant, and is divided from the left inferior surface by the thin so-called anterior border of the liver. This surface has, in the case of the adult liver, had its form compared to that of a right-angled triangle; but in the case of infants in whom there is a left hepatic surface the anterior surface of the liver is more quadrangular than triangular in shape. Even if the left hepatic surface be merged in the superior surface, it will still mask the triangular form of the anterior area in the infant; in the adult the left surface, on account of the relatively small size of the left lobe, is non-existent, and therefore the anterior aspect of the liver has a triangular form, the rounded right angle of which marks the meeting-point of the right and superior surfaces, whilst the hypothenuse of the triangle passes downwards and towards the right side. The anterior liver surface in the normal infant corresponds in its vertical extent in the middle line with the ninth, tenth, eleventh, and twelfth dorsal, and with the first and second lumbar vertebræ, and its free border reaches to within 2 ctms. of the umbilicus. On the left side of the middle line the vertical extent of the anterior surface gradually diminishes in area, whilst on the right side it gradually increases, so that the border of the liver there comes to within 1 or 1·5 ctm. of the right iliac crest.

The *right surface* (Plate III.) of the liver is the least clearly defined, for it is separated from the other surfaces (except the left inferior) by rounded, ill-defined borders, nevertheless it is present in both the adult and infantile organ, although it is of much larger extent in the case of the latter. The *posterior surface* (Plate I.) is small, and is, like the right, not very clearly marked off from the others. It is, however, very evident in sagittal mesial sections. According to His, it includes the notch for the œsophageal end of the stomach, the posterior part of the longitudinal fissure containing the ductus venosus, the groove for the inferior vena cava, the lobus Spigelii, the depression for the supra-renal capsule, and that part of the right hepatic lobe above the kidney which lies in direct contact with the liver. It is a small surface, and corresponds in vertical extent with the tenth, eleventh, and twelfth dorsal vertebræ in the infant.

The *left inferior surface* (Plates I. and III.) is very clearly marked off from the others by the so-called anterior border of the liver, and by the groove anterior to the lobus Spigelii. It is a large surface, and is in relation with many organs which leave impressions upon it easily recognisable in frozen sections and in hardened specimens. The organs in contact with this surface are the stomach, the spleen, part of the supra-renal bodies, the duodenum, transverse colon, the hepatic flexure of the colon, and some of the coils of small intestine lying in the upper part of the abdominal cavity. On this surface lie, as every student of anatomy knows, the longitudinal and transverse fissures, and that for the gall-bladder; and the area is made up of the under surfaces of the right and left lobes, and of the quadrate and caudate lobes of the liver. The *left* hepatic surface (Plate III.), which is sometimes, but not always, found in the infantile organ, is ill-defined, and has, for the sake of comparison with the adult liver, been merged in the upper surface.

The relative size of the various liver surfaces is of some importance, and in estimating their limits I have followed the directions laid down by Symington. In two normal cases the superficial extents of the various surfaces were ascertained to be as follows:—

	Case I. Ctms.	Case II. Ctms.
Ant. surface, transverse extent, .	9·5	9·5
So-called ant. border, . . .	15·0	15·2
Sup. surface, transverse extent, .	8·7	8·8
„ „ ant. posterior extent,	2·7	2·0
Right surface, vertical extent, .	5·5	4·8
„ „ ant. post. „ .	3·8	3·5
Post. surface, vertical „ .	3·3	3·0
„ „ transverse „ .	5·7	5·3
Left inf. surface, transverse extent,	9·2	10·0
„ „ „ ant. posterior extent,	4·2	3·3

From the foregoing table it will be seen that the anterior and left inferior surfaces were the largest; the superior, right, and posterior surfaces showed much smaller areas. The surfaces come in order thus,—anterior, left inferior, superior, right, and posterior.

With regard to the above description of the characters and extents of the various surfaces of the liver, it may be said, *Cui bono?* The answer is not difficult to find. If the clinical investigation of the abdominal viscera in the infant is to reach the same state of perfection as that in the adult, then it is necessary that the relations and dimensions of all the parts to be palpated or percussed be accurately ascertained in normal cases.

In Dr Symington's paper above mentioned allusion was made to displacement of the liver due to distension of the stomach: in none of my specimens was the stomach distended, but in one case there was hypertrophy of the spleen (Plate III., fig. 2), and in that instance there was a displacement of the liver similar to that described by Symington. The liver as a whole was rotated towards the right side on a vertical axis passing through the inferior vena cava, and the left lobe of the liver was also pushed slightly forwards and upwards. The displacement was easily ascertained by comparing the line of attachment of the falciform ligament to the liver with the middle line of the body.

The lobes of the infantile liver differ in relative size from those in the adult organ. Both the right and the left lobes are very large, and the lobus Spigelii is of extremely variable dimensions. The longitudinal fissure is very large in the infant, and contains the umbilical vein and the ductus venosus. In one specimen there was found a very large pons hepatis bridging over the anterior part of this fissure.

In all the still-born infants dissected by me, and in one infant who died on the sixth day of life, the gall-bladder was found to be distended with bile (Plate IV.)

The liver in the infant has a darker colour than in the adult, and its weight in relation to the general body weight is as 1 to 18.

The explanation of most of the peculiarities in the anatomical relations of the abdominal viscera in the infant is to be found in the large size of the liver at that period of life.

The Stomach.—It has been frequently stated that in the case of the new-born infant that has not breathed the walls of the stomach are in close contact, the gastric cavity being only potential; but in all the cases examined by the sectional method there was a real gastric cavity containing frothy watery mucus (Plates II. and IV.) In the case of the infant that died six days after birth (Plate III., Fig. 1), the stomach contained milk, mucus, and air-bubbles; this infant died suddenly from heart clotting. In one of the still-born infants there was a small quantity of meconium in the stomach, and in this case there had been great delay in the labour, and forceps had been used. It is, of course, difficult to say how far post-mortem changes may serve to account for these conditions of the stomach contents, and medico-legal proofs of "live-birth" founded upon the state of the contents of the stomach are apt to contain fallacies.

The stomach is small in size at birth, and contains only 1 or 1½ oz. of fluid without being over-distended. During the first two months of life there is a rapid increase in gastric capacity, but thereafter the increase is slow.

Symington does not believe that the stomach in the new-born infant differs in form from that in the adult; but my specimens have led me to believe that the fundus of the stomach is relatively small at birth, and that the lesser curvature forms a more acute angle than in the adult organ. The upper part of the lesser curvature runs vertically downwards and slightly forwards, and then turns sharply round to the right, forming an angle which is smaller than a right angle. The vertical position of the lesser curvature is now by many anatomists regarded as normal even in the adult stomach, and yet it is still described in many text-books as the *upper* curvature. It is certainly not the upper border in the infant's stomach, there the fundus is distinctly the highest part of the viscus.

As regards position, in all the cases examined the stomach lay entirely to the left of the middle line, the pylorus being situated immediately in front of the body of the first lumbar vertebra. It must be remembered that in none of these cases was the stomach greatly distended. In all the specimens, also, the stomach lay entirely under cover of the liver; hence, on opening the abdomen of the new-born infant, one must not expect to see the stomach until the liver be raised (Plate IV.) The anterior relations of the stomach were with the left inferior surface of the liver, whilst posteriorly the viscus was in contact from above downwards with the anterior surface of the spleen, the left supra-renal capsule, the upper end of the left kidney, and with the tail and body of the pancreas. Below the greater curvature of the stomach was the transverse colon. The lesser curvature runs at first parallel to the left side of the vertebral column, and then turns, to pass transversely to the right side in front of the spine. The relations of the stomach with the left kidney are not extensive in the infant, for the large adrenal of that side intervenes.

The well-known ease with which an infant vomits has found many explanations; but, to my mind, it is chiefly due to the fact that the stomach is surrounded on all sides by firm resistent organs. In front lies the liver, and behind are the spleen, suprarenal body, and kidney, and therefore any increase in abdominal pressure will tell with greater effect upon the stomach thus surrounded than if it were in contact with the more resilient anterior abdominal wall. It may be also, as is suggested by Gubaroff (*Arch. f. Anat.*, 1886), that the valvular action of the cardiac end of the stomach is weak in new-born infants.

The Intestines.—The *small* intestine, according to Treves, measures 9 ft. 5 in. in length at birth, and grows about 4 ft. in the first two months of life; but it is very probable that the length varies considerably in different infants. The duodenum is continuous with the pyloric end of the stomach in the middle line of the body, and opposite to the body of the first lumbar vertebra. The duodenum, in its three parts, has the same relations with the pancreas as in the adult, for it forms a curve with an internal concavity in which lies the head of that organ. The third part of the duodenum crosses over the vertebral column at the level of the second lumbar body, and so reaches the left side of the middle line, where it becomes continuous with the commencement of the jejunum. The jejunum and ileum are less fixed in position than the duodenum. In the new-born infant they contain, as a rule, a little meconium, and they call for no further special notice.

The Large Intestine.—In the infants which were examined by the frozen sectional method there were several peculiarities in the arrangement of the large intestine, and it will be necessary to study these cases in some detail. The *cæcum* and *ascending colon* first call for description. In two cases (C and D) the cæcum was found in the position which it occupies in the adult; that is to say, in the right lumbar and right iliac regions. In case C (Plate III., Fig. 1), the cæcum was found lying a few mms. above the crest of the right ilium, at which point it became continuous with the termination of the ileum by the small rounded aperture known as the ileocæcal valve. It was firmly fixed to the anterior surface of the iliac fossa, and to the posterior abdominal wall in the right lumbar region above the right iliac crest. Thence the ascending colon passed upwards and towards the middle line to the immediate neighbourhood of the gall bladder on the under surface of the liver, where there was a feebly-marked hepatic flexure. This infant had lived for five days, and consequently the intestine contained only a small quantity of meconium, and was not in a distended condition. The vermiform appendix was more conical in form than in the adult condition, the base of the cone was attached to the bowel, the appendix was 3·1 ctms. in length, was twisted upon itself, and was firmly attached to the outer surface of the cæcum by a thin piece of mesentery. In case D the cæcum was situated in the right lumbar region, 1 ctm. above the level of the right iliac crest, and lay, therefore, at a higher level than in the preceding case. The ileo-cæcal valve was 5 mms. in diameter, and the ileum opened into the cæcum at an acute angle. The cæcum was largely distended with meconium (the infant was still-born), and was firmly attached by a short mesentery to the posterior abdominal wall on the right lumbar region. There was a well-marked appendix vermiformis coming off in a conical manner from the cæcum, it measured 4 ctms. in length, and was, as in case C, firmly attached to the cæcum by a thin mesentery. The appendix was also folded upon itself. The ascending colon passed upwards along the right lateral abdominal wall to the under surface of the right lobe of the liver at the border separating the right surface from the left inferior. At this point there was a well-marked hepatic flexure. In this case, therefore, the arrangement of the cæcum and ascending colon closely resembled that found in the adult, with the single exception that the cæcum lay at a level slightly superior to that it occupies normally in the adult. In case C, whilst the cæcum was practically in the position in which it is found in the adult, the course of the ascending colon upwards and slightly to the left to the neighbourhood of the gall bladder and head of the pancreas, showed that this portion of the bowel had a position which is normal at the stage of intra-uterine life before the complete revolution of the large intestine round the axis of the superior mesenteric artery has taken place. In yet a third case (Plates I. and II.) a state of affairs still more closely resembling the embryonic disposition of the cæcum and ascending colon was found, for in this infant (also still-born) the cæcum lay in the middle line of the body at the level of the umbilicus in front, and of the fifth lumbar and first sacral vertebræ behind, and rested upon the posterior surface of the bladder, and was in contact with the anterior surface of the spinal column. The ileo-cæcal valve lay at the level of the lower border of the last lumbar vertebra. From the cæcum the ascending colon passed almost vertically upwards to the liver, with which it came in contact in front of the pancreas and first part of the duodenum, and there formed the hepatic flexure. In this case, therefore, the ascending colon lay only a few mms. to the right of the middle line, whilst the cæcum lay in the middle line, and extended slightly to the left side of it. The ileo-cæcal valve lay, as nearly as might be, in the exact middle line of the body behind the umbilicus. There was therefore here an arrangement of parts very closely simulating that found in the embryo before the cæcum and ascending colon of the primitive intestine have taken up their mature position in the right lumbar and right hypochondriac regions. It is usually stated that in the process of development the cæcum, after crossing over the small intestine, passes to the right hypochondrium, and then pushes downwards into its ultimate position in the right lumbar and right iliac regions; but my cases above recorded go to support the view of the development of the colon stated by Bruce Young (Cleland's *Memoirs of Anatomy*, vol. i. p. 81) in the following words:—"The portion of colon from which in normal circumstances the ascending and right half of the transverse colon are developed already exists as part of the primary loop, before the twist of the intestine to the right occurs; so that when the rotation does take place, it is the whole loop with its peritoneal surroundings which revolves round the superior mesenteric artery until the cæcum lies in the lower part of the right lumbar region. A slight downward growth is then all that is needed to carry it into the adult position." The above-named anatomist records the case of an adult male in whom the cæcum projected into the pelvis, and with the lower part of the ascending colon lay free on the *left* side of the middle line. The ascending colon passed upwards on the left side of the middle line, and in contact with the anterior abdominal wall, to the upper end of the duodenum; it then turned abruptly to the left, descended as low as the left iliac fossa, and then passed upwards again in a series of closely-packed convolutions to reach the splenic flexure. The descending colon, he states, ran normally into the sigmoid flexure and rectum. In this case the loop of bowel descending from the neighbourhood of the duodenum to the left iliac crest was regarded as part of the ascending colon, and, therefore, according to this view, there was no transverse colon at all; but for reasons to be stated immediately, I am inclined to regard this loop as transverse colon displaced downwards and to the left. Dr Bruce Young's case taken in conjunction with the three cases just described represent gradations in abnormality from the degree in which the cæcum and ascending colon lie entirely to the left of the middle line to that in which there is only a slight displacement of the cæcum. In Bruce Young's case both cæcum and ascending colon lay to the left of the middle line; in my case

A (Plate I.), the cæcum lay in the middle line behind the bladder, and the ascending colon passed upwards, lying only a few millimetres to the right of the middle line; in case C (Plate III.) the cæcum was approximately normal in position, but the ascending colon passed upwards and towards the left side till it reached the second part of the duodenum and head of the pancreas; and in case D the ascending colon may be said to have been normal in position, but the cæcum was situated at a slightly higher level than was normal in the adult. In the four cases there were, therefore, four stages in the process of rotation of the ascending colon and cæcum from their primitive position to the left of the middle line to their adult position in the right iliac, lumbar, and hypochondriac regions. Dwight also, in his *Atlas*, shows the cæcum in a three year old child, lying on the right side at the level of the umbilicus, and he says—"I doubt very much if, as a rule, the cæcum has reached its permanent position at birth, and think that not very rarely it does not reach it for a year or two afterwards." At the time when I first read the above statement I felt inclined to agree with Dwight in his conclusion, for I had then made frozen sections of five infants, in none of whom were the cæcum and ascending colon in the position which they normally occupy in the adult. Two of these infants, however, showed gross pathological conditions of the abdominal organs, and were, therefore, left out of account; and I had an opportunity soon afterwards of making sections of two other normal infants and one seven months' fœtus, in all of which the cæcum and ascending colon were quite normal in position. The only conclusion which it is, therefore, permissible to draw is, that the cæcum and ascending colon have frequently at the time of birth a position more or less far removed from that found normally in the adult arrangement of parts. It is more difficult to judge from simple dissections of the abdominal viscera, for the parts are apt to be displaced artificially; but even in infants examined in this way I have not uncommonly found that the cæcum and ascending colon were more or less abnormal in position at birth.

The Transverse Colon.—In case D, that in which the ascending colon was practically normal in position, and in the other cases in which that part of the bowel showed no abnormality, the transverse colon also was normally situated. It began on the right side in the hepatic flexure, passed towards the middle line along the under surface of the liver, and was then directed to the right along the greater curvature of the stomach to reach the splenic flexure. It had a transverse meso-colon, and was also attached to the great omentum. In cases A and C (Plates I. and II.), in which the ascending colon was abnormally situated, the transverse colon found its commencement in a feebly marked hepatic flexure which lay not far to the right of the middle line in the neighbourhood of the gall bladder. It might have been expected, therefore, that in these cases the transverse colon would have a short course, and at first sight it was thought that this was so. The transverse colon formed a flexure in the neighbourhood of the border of the left lobe of the liver, then the bowel passed downwards to the left iliac crest, then it turned upwards again, reached the spleen, where it formed another flexure, and again proceeded downwards along the posterior abdominal wall, to become continuous with the sigmoid flexure. At first sight it seemed that in these two cases there were two splenic flexures, and two descending colons, a superficial and a deep; but the examination of the arrangement of the mesentery and of the relations of the bowel soon demonstrated the fact that the so-called superficial splenic flexure and descending colon were really a loop of transverse colon displaced downwards, whilst the deeper structures were in truth the splenic flexure and descending colon properly so called. The transverse colon, therefore, in these cases, did not pass simply from right to left hypochondrium, but formed also a loop passing down to the left iliac region, and lying superficial to the true splenic flexure and descending colon. In the infants in whom the ascending colon was normally situated, the transverse colon formed no accessory loop; and it is, therefore, reasonable to suppose that the abnormal arrangement of the transverse depended upon that of the ascending colon. The bowel was crowded into the left side of the abdominal cavity, the large left hepatic lobe barred its progress upward, and it therefore formed a loop passing downwards into the left iliac region, and displaced the small intestines to the right side of the abdomen. It cannot be said from these cases whether the above is a common arrangement or not; but it must at any rate be borne in mind by abdominal surgeons that this disposition of parts does occasionally occur in the new-born infant.

The Descending Colon.—This part of the large intestine was normally situated in all my cases, and calls for little or no notice. It passed from the splenic flexure in front of and external to the left kidney down to the commencement of the sigmoid flexure, which was a somewhat variable point. It was attached by areolar tissue to the quadratus lumborum muscle, and to the left diaphragmatic crus.

The Sigmoid Flexure is large in the infant at birth. It becomes continuous at the level of the left iliac fossa with the lower end of the descending colon, and terminates, after having described one or two curves, in the first part of the rectum. In all the cases examined by the sectional method, a loop of the sigmoid flexure was found lying below the brim of the pelvic cavity and posterior to the bladder in the male and to the uterus and annexa in the female infant. The loop of the sigmoid flexure was usually situated a little to the right of the mesial line in the pelvis, and the fact that this part of the bowel was so constantly found in the narrow infantile pelvic cavity is most noteworthy. To its presence has been ascribed a very obstinate form of constipation in the infant, which has been named in consequence of this, "anatomical" constipation. I know not whether the presence of a loop of sigmoid flexure in the pelvis is a constant occurrence in infancy or not; but it is well known that this part of the bowel is relatively long at birth, and that it has a rather long mesosigmoid.

The Rectum is that part of the bowel which is lodged in the pelvis, and it is not, therefore, an abdominal organ; but its chief peculiarities in the infant may be briefly stated. It is relatively larger in the infant than in the adult, it is more vertically situated in the pelvis, and it is more nearly a straight tube. In the infant, therefore, this part of the large intestine is more deserving of the term *rectum* applied to it than it is in the adult, where it is very far from being a straight tube. The large size, vertical position, and nearly straight character of the rectum in the infant make this part of the bowel very accessible for the thermometer, enema syringe, etc.

The Spleen.—Luschka describes the adult spleen as possessing three surfaces—a phrenic, a gastric, and a renal; but this description will not suffice for the infantile spleen. In the infant the liver comes into contact with the spleen behind and external to the stomach,—in fact, in one case (D) the spleen was entirely hidden by the left lobe of the liver, and lay in a concavity on the left inferior surface of that organ. Further, in the infant the spleen has a direct relationship with the left supra-renal capsule instead of with the left kidney. The spleen in the infant may, therefore, best be described as having four surfaces, and these may be named gastric, hepatic, phrenic, and supra-renal. These surfaces are all clearly marked, and show the impressions of the organs which have lain in contact with them. Lateral sagittal sections serve to demonstrate these surfaces. Thus in a section made a little to the left of the middle line (Plate II.) three of the surfaces are seen—the phrenic posteriorly, the gastric in front, and the supra-renal inferiorly; but at a point further from the middle line all the four surfaces are visible—phrenic posteriorly, hepatic anteriorly, gastric antero-internally, supra-renal inferiorly. The antero-internal or gastric surface in relation with the tail of the pancreas as well as with the stomach. If it be deemed advisable, the surfaces may be named according to the direction in which they point. Thus the phrenic surface becomes the posterior, the hepatic becomes the antero-external, the gastric and pancreatic surfaces become the antero-internal, and the supra-renal becomes the inferior surface. Near the middle line of the body the spleen shows three surfaces, and therefore vertical sections here represent the organ as triangular. Further to the left, however, there are four surfaces, and the spleen is there quadrangular in vertical section. In one case

(Plate III., Fig. 2) the spleen was much hypertrophied, and therefore in that case the antero-external surface came into contact not only with the liver, but also with the anterior abdominal wall, whilst the antero-internal surface was related to the stomach and pancreas, and also to the mesentery and splenic flexure of the colon, and to an accessory spleen (which was present).

The following table contains the measurements of the infantile spleen in two cases (A and D) in which it might be regarded as normal, and in one case (C) in which it was much enlarged:—

Surfaces.	Cases A & D. Ctms.	Case C. Ctms.
Antero-external or hepatic—		
Vertical extent, ...	4·0	6·1
Transverse do., ...	2·9	3·2
Length of anterior notched border, .	3·9	5·3
Antero-internal or gastric surface—		
Vertical extent, ...	2·8	5·5
Antero-posterior extent, . .	2·2	1·9
Posterior or phrenic surface—		
Vertical extent, ...	2·6	4·5
Transverse do., ...	1·4	2·0
Inferior or supra-renal surface—		
Vertical extent, ...	1·1	1·7

The antero-external or hepatic surface is, therefore, the largest, and it is interesting that in the infant at birth this large surface is under cover of the left lobe of the liver. As the stomach grows rapidly in size during the first weeks of life, the hepatic surface of the spleen is quickly encroached upon by the gastric surface of that organ; but at birth the hepatic surface is the largest, the gastric comes next, then the phrenic or posterior, and the inferior or supra-renal is normally the smallest. In the case in which the spleen was hypertrophied, it is interesting to note that the large size of the organ was chiefly due to increase in a vertical direction.

The relations of the spleen with the surrounding viscera have been already in part described: the upper end of the organ reaches as high as the fundus of the stomach, *i.e.*, to the level of the 9th rib, near its attachment to the spinal column. The posterior surface rests upon the diaphragm, and behind the diaphragm is the base of the left lung. The relations of the spleen to the liver, stomach, transverse colon, and splenic flexure are well brought out in Plates II. and III.

The anterior border of the spleen is sharp and notched, and in most cases I counted four notches, two close together and two further apart. None of the notches were deep in the cases examined.

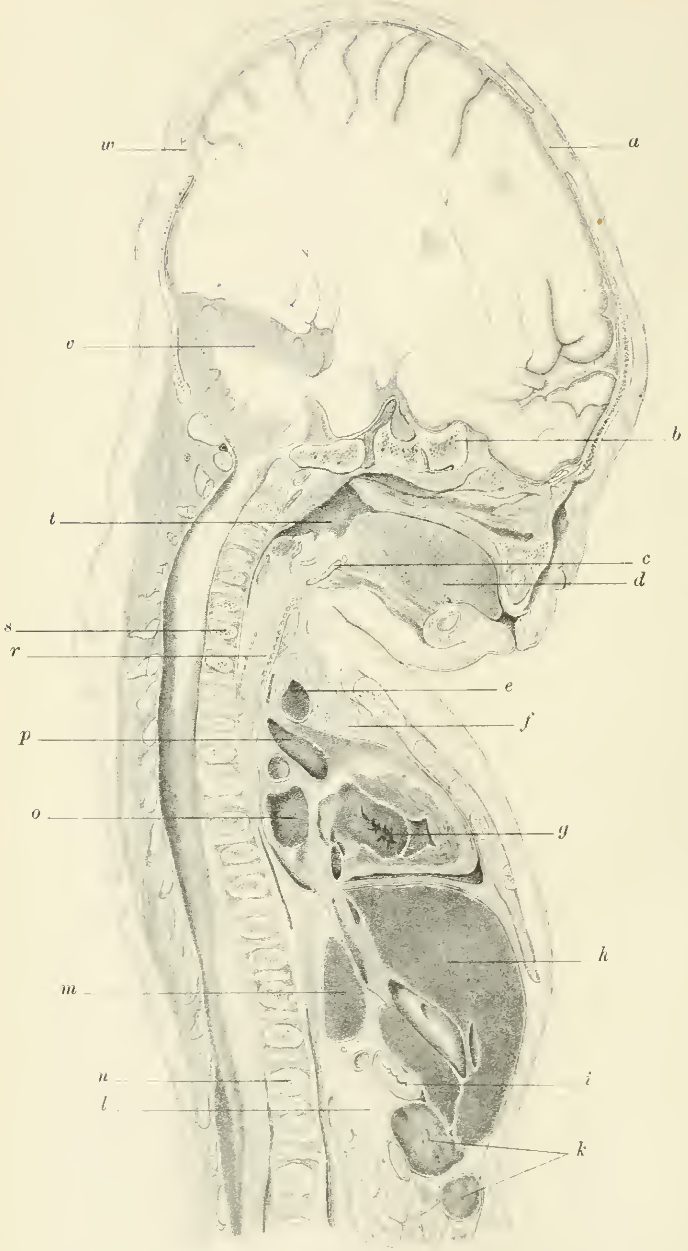
The spleen is darker in colour in the new-born than in the adult, and is very easily torn. The hypertrophied spleen was, however, much firmer than is normal at birth. The cause of the hypertrophy I am ignorant of. The infant had lived five days, and had died of ante-mortem heart-clot which may have had some connexion with the large size of the spleen.

The remaining abdominal viscera—the kidneys, supra-renal capsules, and pancreas—require only a few words of description, for they differ little in their characters from the same organs in the adult.

The *Supra-renal Capsules* are relatively large in the new-born infant, being usually equal in volume to one-third of the kidney. They have the form of a triangular pyramid; and they rest upon the upper end of the kidney, covering it like a cap. The base of the adrenal descends upon the kidney anteriorly to the level of the hilus of that organ, and is hollowed out in order to fit the renal convexity. The apex of the right adrenal lies between the liver and the right crus of the diaphragm, at about the level of the 10th rib; that of the left is wedged in between the spleen and the left diaphragmatic crus at a point a little above the level of the 11th rib. The posterior surface rests upon the diaphragm at the side of the vertebral column, and anteriorly the right adrenal comes into contact with the left inferior surface of the liver and with its posterior surface, whilst the left is related to the spleen, stomach, pancreas, and small intestine. Antero-posteriorly the supra-renal capsule measures, on an average, 1 ctm., and its greatest transverse diameter at its base is 1·5 ctm. Its vertical diameter from apex to anterior border of base measures 3·5 ctms., to posterior border of base 1·5 ctm. It therefore descends to a lower level in front of the kidney than behind it. The outer zone of the capsule is seen on section to be of a light pink colour, the inner zone is of a darker tint, and here and there fissures run into the organ, dividing it into two or three lobes.

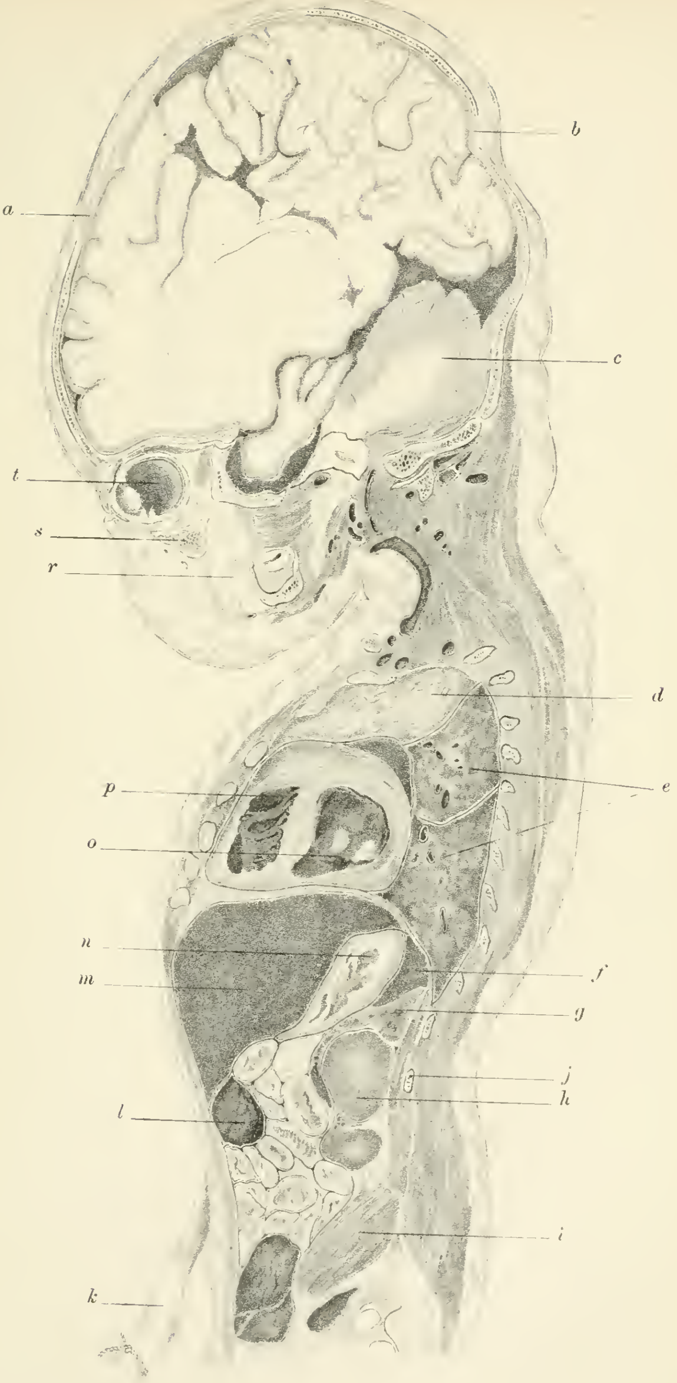
The Kidneys.—These organs correspond in level with the 1st, 2nd, and 3rd lumbar vertebræ, with the disc between the 12th dorsal and 1st lumbar, and with that between the 3rd and 4th lumbar vertebræ. The right kidney measures about 3·8 ctms. vertically, the left about 3·5 ctms. The greatest antero-posterior diameter is from 1·5 to 1·8 ctms., and the greatest transverse about 2·3 ctms. It is usually stated that the left kidney is longer than the right, and is situated at a higher level in the abdomen; but I have not found this to be the case in the new-born infant. In position the kidneys were practically identical, and in vertical measurement the right was the longer. The relations of the kidneys to surrounding organs are practically the same as in the adult, with the exception that the supra-renal capsules cover a greater part of their surface, especially anteriorly. The hilus of the kidney lies at the level of the 2nd lumbar vertebra. The renal lobulation is more marked at birth than in later life, but is not so distinct as it is in the fœtus. The lower end of the kidney reaches to within a distance of a few millimetres from the iliac crest.

The *Pancreas* has the same relations with surrounding viscera and vessels in the infant as in the adult. In the middle line the head and commencement of the body of the pancreas lie opposite



Mesial Sagittal Section of New-born Infant (⅝ *Natural Size*).

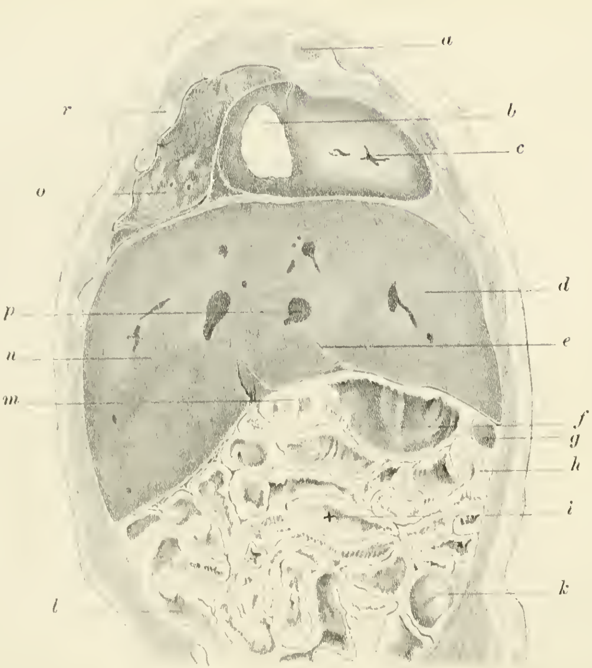
Plate II



Left Lateral Sagittal Section of New-born Infant ($\frac{5}{8}$ *Natural Size*).

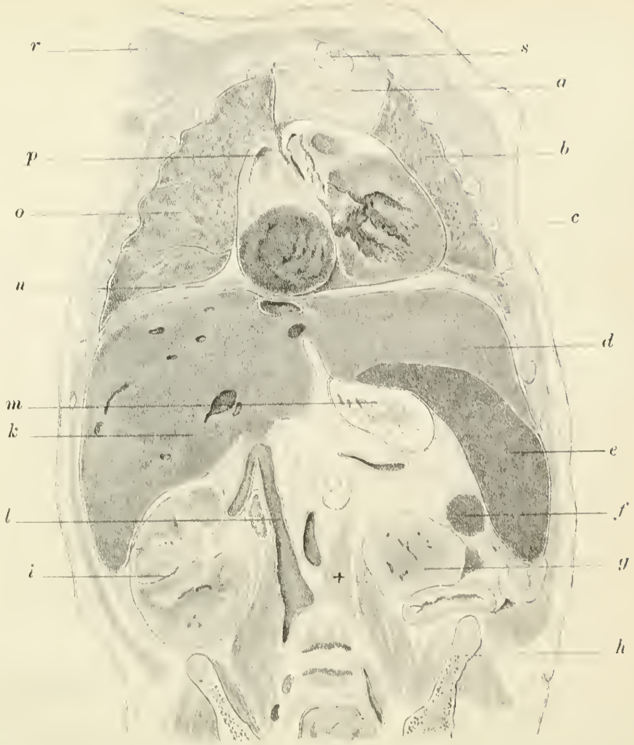
Plate III

Fig 1



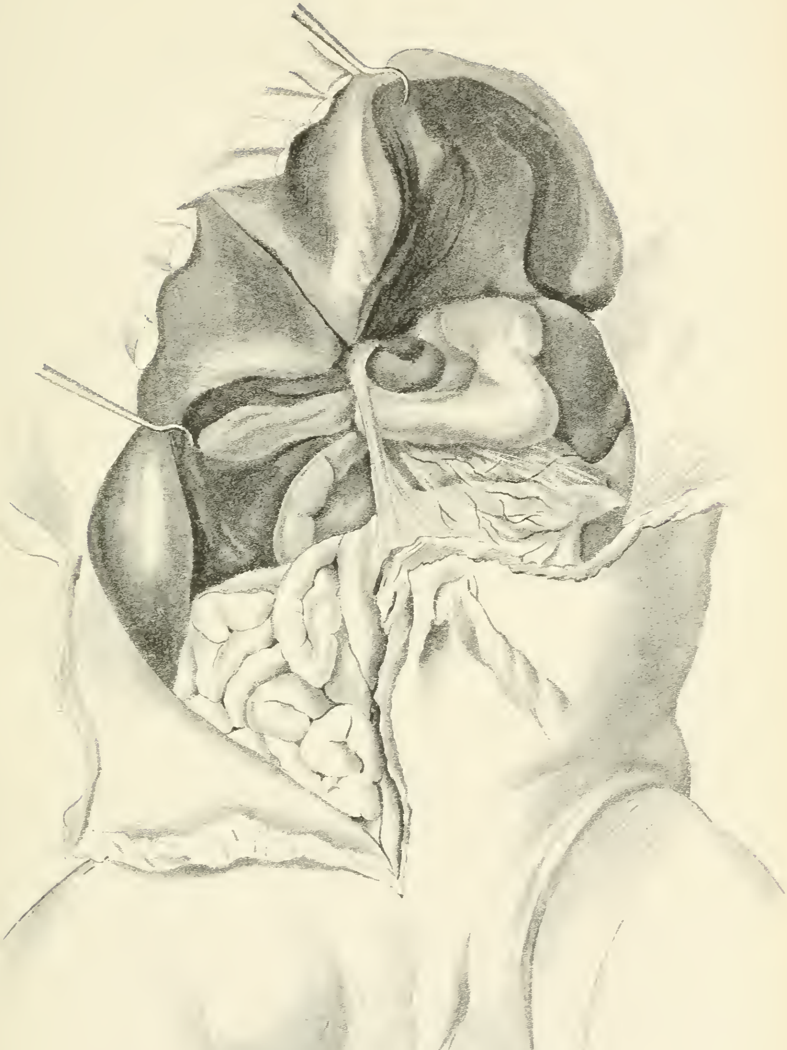
Coronal Section of Thorax and Abdomen of New-born Infant ($\frac{5}{8}$ *Natural Size*).

Fig 2



Coronal Section of New-born Infant, Thorax and Abdomen, posterior to Fig. 1 ($\frac{5}{8}$ *Natural Size*).

Plate IV



Dissectional View of Abdominal Viscera in New-born Infant ($\frac{2}{3}$ *Natural Size*).

to the 1st and 2nd lumbar vertebræ. The left renal vein crosses immediately behind the pancreas, the superior mesenteric vein and artery lie partly behind it and partly in its substance, and the first part of the duodenum and the transverse colon lie in front of it. From head to tail the pancreas measures in the infant about 3·5 ctms., and the antero-posterior diameter of the head is a little over 1 ctm.

The *Bladder* is practically entirely an abdominal organ at birth; but I shall not consider it at this time, as I have already done so fully in a paper entitled "The Pelvic Viscera in the Infant," which appeared in the *Edinburgh Medical Journal* for August 1890.

The following important points in this communication may be briefly re-stated as follow:—

1. The relations of the abdominal viscera, liver, stomach, spleen, etc., to each other and to the bony landmarks, and more especially the vertebral column, have been pointed out, so as to lay a sure foundation for their clinical investigation by means of palpation and percussion.

2. The form and dimensions of the liver, stomach, spleen, and supra-renal capsules have been stated, so as to throw some light upon certain peculiarities in the infantile economy, *e.g.*, the ease with which infants vomit, the common occurrence of prolapsus recti.

3. The frequency of an abnormal disposition of the large intestine, especially of the sigmoid flexure, has been insisted upon as giving a clue to the cause of some cases of obstinate constipation in infants, and as affording a warning to surgeons who may have to open the abdomen for imperforate anus, etc.; and

4. The whole subject has been investigated by the frozen sectional method, so as to insure the least possible disturbance of relations.

DESCRIPTION OF PLATES.

PLATE I.—Mesial Sagittal Section of New-born Infant. In the upper part of the region of the Head the section has passed slightly to the right of the middle line, leaving the falx cerebri unexposed. *a*, Anterior Fontanelle; *b*, Presphenoid; *c*, Thyroid Cartilage of Larynx; *d*, Tongue; *e*, Left Innominate Vein; *f*, Thymus Gland; *g*, Tricuspid Opening in the Heart; *h*, The Liver; *i*, The Pylorus; *k*, Transverse Colon; *l*, The Pancreas; *m*, Lobus Spigelii of Liver; *n*, First Lumbar Vertebra; *o*, Left Auricle; *p*, Aorta; *r*, Trachea; *s*, Seventh Cervical Vertebra; *t*, The Pharynx; *v*, Cerebellum; *w*, Posterior Fontanelle.

PLATE II.—Left Lateral Vertical Section of New-born Infant. Right face of Section seen, $\frac{5}{8}$ natural size. *a*, Anterior Fontanelle; *b*, Posterior Fontanelle; *c*, Cerebellum; *d*, Thymus Gland; *e*, Left Lung, Upper and Lower Lobes; *f*, Spleen; *g*, Left Supra-renal Capsule; *h*, Left Kidney; *i*, Left Psoas Muscle; *j*, Twelfth Rib; *k*, Umbilical Cord; *l*, Transverse Colon; *m*, Liver, Left Lobe; *n*, Stomach; *o*, Left Ventricle of Heart; *p*, Right Ventricle of Heart; *r*, Left Sucking-pad; *s*, Left Malar Bone; *t*, Left Eye.

PLATE III.—Coronal Sections of Thorax and Abdomen of New-born Infant, $\frac{5}{8}$ natural size. FIG. 1.—Coronal Section of Thorax and Abdomen in Plane of Stomach. *a*, Sternum, Third Ossific Centre; *b*, Clot in Right Auricle of Heart; *c*, Right Ventricle of Heart; *d*, Left Lobe of Liver; *e*, Longitudinal Fissure of Liver; *f*, Stomach; *g*, Spleen; *h*, Transverse Colon; *i*, Position of Umbilicus; *k*, Sigmoid Flexure; *l*, Cæcum; *m*, Duodenum; *n*, Right Lobe of Liver; *o*, Right Lung, Middle Lobe; *p*, Umbilical Vein; *r*, Fourth Costal Cartilage (right).

FIG. 2.—Coronal Section of Thorax and Abdomen in plane posterior to that in Fig. 1. *a*, Thymus Gland; *b*, Left Lung, Upper Lobe; *c*, Left Ventricle of Heart; *d*, Left Lobe of Liver; *e*, Hypertrophied Spleen; *f*, Accessory Spleen; *g*, Left Kidney; *h*, Left Iliac Crest; *i*, Right Kidney; *l*, Vena Cava Inferior; *k*, Right Lobe of Liver; *m*, Stomach near Fundus; *n*, Diaphragm; *o*, Right Lung, Middle Lobe; *p*, Opening of Superior Vena Cava; *r*, Coracoid Process; *s*, Manubrium Sterni.

PLATE IV.—Dissectional View of Abdominal Viscera in New-born Infant, $\frac{2}{3}$ natural size. The liver has been drawn upwards in order to show the position and form of the stomach. The transparent character of the great omentum is well displayed, and the green colour of the meconium in the transverse colon can be seen shining through the omentum. The umbilical vein is shown passing upwards in the falciform ligament of the liver.

Part Second.

REVIEWS.

Introduction to the Diseases of Infancy. By J. W. BALLANTYNE, M.D., F.R.C.P.E., etc. Edinburgh: Oliver & Boyd: 1891.

WE welcome this book, as one well calculated to fill a gap that has long been felt by those engaged in the study of the diseases of infancy and childhood. It is rightly named an "Introduction" to the Diseases of Infancy, for it contains the ground-work with which all who aim at treating those diseases intelligently ought to be acquainted. It is devoted almost entirely to a thorough description of the anatomy and physiology of the infant and young child, with special reference to the peculiarities which exist in the structure and functions of the various organs in early as compared with those of adult life. Those variations, which are more numerous and important than is generally believed, are then used as a basis for a rational system of hygiene and management. A second volume, treating in detail the various diseases of infancy, is promised.

The anatomy of the infant is given in full detail, and is the outcome of much original work by the author, by means of frozen sections, combined with frequent excerpts from the recent work of Symington, Cunningham, and many others. Of special interest to the practitioner, in this section, are the observations on the position of the larynx and trachea; on the size and situation of the thymus gland; on the size and position of the heart; on the size, relations, and growth of the stomach and intestines, particularly the cæcum; and the relations of the bladder to the abdominal wall and the pelvis.

In the chapters on physiology dealing with digestion, we find a description of the various secretions of the stomach and intestines, and from these are deduced the best methods of feeding, and the best kinds of food at the successive periods of infantile life. Of artificial foods the author prefers Meigs's Cream; and he gives sensible and much needed advice as to the whole hygiene of the nursery.

Other chapters treat of dentition, in which the wise opinion is expressed that the process of dentition requires little or no special treatment. The circulation, with full details of the special characteristics of the pulse in infancy, and of the constitution of the blood. Respiration, its rate, character, and the many points in which it differs from that of the adult. The urinary system, the cutaneous system, and the temperature. The last chapter is an interesting *résumé* of the physiology of the nervous system, embracing the motor and sensory phenomena as exhibited in the infant, and the gradual development of ideas, and of the intellectual processes generally. It will be seen from this brief notice of the contents of this excellent work that it contains, in addition to many original observations, a great mass of material got together from various sources, which cannot be found combined in any other book. We heartily commend it, both to teachers and practitioners. There are many excellent plates and woodcuts, which increase the interest and value of the volume.

The Scientific Aspect of Dr Koch's Treatment. By WILLIAM ODELL, F.R.C.S. Edinburgh: Young J. Pentland: 1891.

THIS is a simple and, evidently, candid *résumé* of the author's experience in the use of tuberculin, with a number of reports from different centres at home as to its efficacy. But there is no evident reason why the lecture should possess the somewhat pretentious title that has been prefixed. The author's results are reported as good. The last three or four paragraphs, which suggest an advertisement on behalf of Torquay, might with advantage have been omitted in dealing with "the scientific aspect" of this important subject. But there are two sides to this question.

Notes on Surgery for Nurses. By JOSEPH BELL, M.D., F.R.C.S. Edin., Consulting Surgeon to the Royal Infirmary, and Surgeon to the Royal Edinburgh Hospital for Sick Children. Edinburgh: Oliver & Boyd: 1891.

THAT this little book has supplied a long felt want, and that it is exceedingly popular, is evidenced by the appearance of a third edition within a few years of the first. The author has succeeded in conveying to the uninitiated reader, in the simplest language, a large amount of instruction in surgical principles and practice, and in so doing has earned the gratitude of those who are concerned in the training of nurses in one of the most difficult departments of their calling.

Obstetrical Don'ts. By T. RIDGWAY BARKER, M.D. Philadelphia: W. Appleton Ferree: 1891.

THIS little book consists of a large number of obstetrical aphorisms, and forms an epitome of the whole subject of Midwifery. The statements are on the whole tersely put; but the restriction which the author has placed upon himself rather mars his style, for each rule commences with the word "Don't," and this leads to a certain unusual and inelegant phraseology, *e.g.*, "Don't fail to memorize," "Don't fancy," etc. The medical information contained in the work is in accordance with the latest advances in obstetrics, and it is pleasing to find in an American book the following guarded opinion concerning the value of electricity in extra-uterine pregnancy:—"Don't expect great benefit from the use of electricity in the treatment of ectopic gestation; it is of doubtful utility, and should only be employed in cases refusing operative measures or where the diagnosis is doubtful." The book will no doubt be of great service to students preparing for examination, and it may also with advantage be referred to by the busy practitioner. Here and there are to be found traces of hasty proof revision in the occurrence of such mistakes as "valva" for "vulva," "vesicle" for "vesical," "fandus" for "fundus," etc., but, taken as a whole, the book is carefully prepared and is of conveniently small size.

---

1. *Text-book of Hygiene.* Second Edition. By G. H. Rohé, M.D. Philadelphia and London: F. A. Davis.
2. *A Manual of Public Health.* By A. Wynter Blyth. London: Macmillan & Co.
3. *Aids to Sanitary Science.* By Francis J. Allan. London: Baillière, Tindall, & Cox.

The first of these books is stated to be a "comprehensive treatise of the Principles and Practice of Preventive Medicine from an American standpoint;" and again, in the preface, the author says his "aim has been to place in the hands of the American student, practitioner, and sanitary officer, a trustworthy guide to the Principles and Practice of Preventive Medicine."

We wish we could have been able to congratulate the author on having accomplished his aim satisfactorily. It is impossible to believe that in a country like America, where preventive medicine has advanced with such rapid strides, and where so much is being accomplished every year in all branches of sanitation—a fact well exemplified by the valuable reports of the various State Boards of Health—that the American student and sanitary official could accept the book before us as a satisfactory text-book, or, indeed, as a good summary of the present state of our knowledge in regard to questions of public health. We do not know what standard of knowledge in such matters is required in America, but certainly in this country its information on many subjects would not be deemed sufficient for any ordinary examination in sanitary science. The author has tried to compile a comprehensive text-book, but, apparently from a want of intimate knowledge of the subjects dealt with, and from a desire to overtake too extended a field within a small compass, he has failed to produce a book which can be looked upon as an addition to the literature of this branch of science.

A Manual of Public Health, by Wynter Blyth, forms a complete contrast to the text-book above referred to. The reader is at once impressed by the clearness with which the various subjects are treated, and cannot fail to appreciate how experience as a medical officer of health has helped the author to throw in many practical hints, and thus add to the value of the general information. The chapters on Nuisances, Zymotic Diseases, and Disinfectants are all excellent, and, we think, better treated than in any of the recently published manuals of public health. We are, however, rather disappointed with the manner such a distinguished chemist as the author has dealt with the important questions of ventilation and water-supply, more especially with the latter. In a manual of Public Health these are subjects of prime importance, and, in comparison with the treatment of the other divisions of the book, deserving of fuller recognition and discussion. Purification and softening of water are dismissed in very brief space, and the description, such as it is, fails to give an adequate idea of their importance. Of the various constituents of waters, the interpretation of analyses and practical examination of water, subjects which we should have expected to be exceptionally well and fully treated, we find only comparatively scant notice. The book is very well printed and got up, although in our opinion it is perfectly useless to give coloured lithographs of diseased meat. Morbid appearances are rarely portrayed with much success, or at any rate with such accuracy as to give to the mind of a person who has never seen the actual condition a perfectly clear impression. If so, and if with very little trouble it is in the power of every student to see (at slaughter-houses) the various morbid processes affecting animals, then surely it is unnecessary to waste money on lithographs which for all practical purposes are useless. Notwithstanding these defects, we feel certain that the book will take a high place among manuals of public health, and be found useful and accurate both as a text-book for students and as a book of reference for sanitary officials.

The *Aids to Sanitary Science* is truly a *multum in parvo*. Apart from the principle involved in boiling down standard books so as to supply the student of the present day with his information in a condensed and partially assimilated form—to which we have strong objections—it must be acknowledged that in this instance the work has been well done, and that the numerous facts and data are apparently accurate and put in a clear manner, considering the size of the book. There can be no doubt that, for refreshing the memory with the various subjects treated of in large text-books on public health, this little volume will be found a serviceable and reliable aid.

Collected Contributions on Digestion and Diet. By Sir WILLIAM ROBERTS, M.D., F.R.S., formerly Physician to the Manchester Royal Infirmary, and Professor of Medicine in the Victoria University. London: Smith, Elder, & Co.: 1891.

THIS volume consists of reprints of the Lumleian Lectures delivered in 1880, of five lectures "On Dietetics and Dyspepsia," given at the Owens College in 1885, and of several contributions on similar subjects brought before various societies by the author between 1879 and 1890. The materials have been rearranged and put into some order, while the whole has been carefully revised.

One of the most suggestive lectures is the first of the Owens College series on the Basis of Scientific Dietetics, for in it the author regards the true basis of man's complicated diet to be as instinctive as in the lower animals, and proceeds to argue in the following chapters that the use by man of tea, spices, and alcoholic liquors with his food is not to stimulate the digestive juices and accelerate assimilation, but to retard the digestion of his too well cooked and finely divided viands. The numerous experiments which follow on the effect of these food accessories on salivary, peptic, and pancreatic digestion would be more satisfactory and conclusive if they had not all been performed *in vitro*. After another chapter in praise of the human instinct as exemplified chiefly by the palate, there follow three chapters full of instructions about the preparation and use of peptonised foods, and of other forms of foods suitable for invalids, with notes of clinical experience of the same; while the last chapter is taken up with a description of the acid dyspepsia of otherwise healthy people. It is a book which will repay careful reading, although the deductions from the earlier experiments may have to be modified in the light of later experience.

Notes on the Examination of the Sputum, Vomit, Fæces, and Urine. By Sidney Coupland, M.D., F.R.C.P., Physician to the Middlesex Hospital, and Lecturer on Practical Medicine in the Medical School; Examiner in Medicine at the Examining Board for England. London: H. K. Lewis: 1891.

This little book, made up of memoranda "strictly confined to the most essential points in the examination of sputa, vomit, fæces, and urine," is of a very handy size, but would surely have been of more use to the student, even if only commencing medicine, had it been a little larger and fuller. As it is, it is difficult to imagine any one making anything like a satisfactory examination of the vomit if he did not know a great many more facts, essential facts, than those which are noted down here. On looking over the tests given for the detection of sugar, the only test given by v. Jaksch as infallible is missed out, and surely the Phenylhydrazin test is as essential as Ehrlich's Diazo reaction, to which half a page is devoted further on. Not one of the fallacies which notoriously vitiate the results of Trommer or Fehling's tests for sugar are mentioned, and the Biuret reaction is evidently held as indicative of nothing but peptone. The clinical notes interspersed here and there distinctly enhance the value of the book, which, if brought more up to date, might be very useful to have by one in practice as well as before an examination.

Year Book of the Scientific and Learned Societies of Great Britain and Ireland. London: Charles Griffin & Co.: 1891.

The present volume, or eighth annual issue, is, like its predecessors a convenient handbook of reference, being compiled with great accuracy from data furnished by the Societies themselves. Complete lists are given of the papers which have been read during 1890. As a scientific directory it deserves a place in every library.

The Watering-Places of the Vosges. By H. W. Wolff. London: Longmans, Green, & Co.: 1891.

The number of people who go abroad in search of health increases yearly. Those of us who are personally acquainted with the well-known and at the same time popular watering-places, can alone realize the vast crowd of visitors who regularly form the floating population of the European spas. It is a question whether this over-crowding does not defeat the end in view, and that in many cases a less frequented resort and one nearer home might not be better. Since 1870 the French have been looking out for home spas, and not without success, for 1200 mineral springs are now known, and 114 of these are now utilized as health resorts. Most of the French spas had a bad character on account of faulty accommodation and difficulty of access. Diderot said, referring to French spas, "Le séjour est déplaisant;" but now the writer of this book says, "the watering places referred to thus have been changed: they are practically new places, made accessible by new roads, providing accommodations in newly-built hotels and baths in newly constructed établissements, against most of which there is nothing to be said. The whole face of things is changed." And we agree with him for the most part. Almost every variety of mineral waters, except, perhaps, the class known as sulphurous, which is represented practically by one spring at Bourbonne, can be found in the Vosges. Anyone wishing for information respecting Plombières, Contrexéville, Vitel, Martigny-les-Bains, Bourbonne-les-Bains, Luxeuil, Bain-les-Bains, Bussang, and the small spas of Alsace, will find it in Mr Wolff's book, which may be recommended with confidence.

Medico-Legal Experience in Calcutta. By S. Coull Mackenzie, M.D. Edinburgh: E. & S. Livingstone: 1891.

The various papers which are published in this little book are reprinted from the *Indian Medical Gazette*, and they are of considerable interest. It is very generally supposed that the medical jurisprudence which we understand so well can be adapted without more ado to tropical law-courts, but this is a fallacy, as must be apparent to any thinking man, and Dr Mackenzie brings many facts from his extensive experience to show what differences obtain. To take, for instance, the phenomena occurring after death. It is evident that the post-mortem phenomena witnessed in India differ very materially from those witnessed in Europe, where completely different climatological conditions prevail. A series of 46 cases are detailed, showing the modifications of the phenomena observed. It appears that saponification takes place more readily in the Hooghly and in the damp soil of Bengal than in Europe. Taylor says that saponification takes place after the submergence of the body for five weeks. Our author found it to occur in from three to fifteen days. The statistics given with reference to 305 cases of drowning are very complete, and show the care with which Dr Mackenzie's observations have been made. Perhaps the most interesting chapter in the book is that which relates 111 cases of ruptures of internal organs. It has usually been supposed that in tropical countries rupture of the spleen is most common, but in Dr Mackenzie's experience the liver is most frequently ruptured. This does not quite agree with the experience of Macleod and Harvey, who found that ruptures of the spleen were most frequent in Bengal, but this discrepancy is explained by the fact that the town of Calcutta is far better drained than the civil stations of Bengal, and that hence disease of the spleen is less frequently met with there. Of the 29 uncomplicated ruptures of the spleen met with by the author, that organ was found to be diseased in 96·5 per cent. of the cases, and the weight varied from 10 ozs. to 3 lbs. 14 ozs. These observations will prove useful to all medical jurists.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXX.—MEETING VIII.

Wednesday, 6*th May* 1891.—Professor SIMPSON, *President, in the Chair.*

I. EXHIBITION OF PATIENT.

Dr John Thomson showed a case of ADDISON'S KELOID on the right hand of a male infant aged 13 months. The patient was perfectly healthy in all other respects, and was the only child of perfectly healthy parents. Six months ago the mother noticed a small wart-like lump on the radial side of the little finger, on the right hand, near the terminal joint. There had been no abrasion of the skin nor any injury whatever. It caused no pain, and little attention was paid to it, until some months later it was seen to have spread and to have caused flexion of the finger. The flexion of the finger increased steadily, and other similar nodules appeared on it; and three months ago the adjacent aspect of the ring-finger became implicated. One month ago, a similar nodule was found on the skin over the ulnar margin of the hand, and now there were two in that position. The disease consisted of hard nodules connected by bands of hard scar-like tissue, which, although originating in the skin, affected the entire thickness of the soft parts. There had evidently been considerable contraction of the morbid tissue, as the fingers were fixed in a flexed position and had their terminal phalanges inclined laterally toward one another. No cause of any kind could be discovered. The distribution suggested the probability of nervous influence. Arsenic had been given for three weeks, but the disease had increased in prominence distinctly during that time.

II. Exhibition of Specimen.

Dr Affleck showed a case of ABSCESS OF THE LIVER.

Prof. Grainger Stewart stated that he had the patient under his care in the summer and autumn of 1889. That she then had enlargement of the liver; and that he, suspecting hydatid or abscess, carefully explored the liver with an aspirator. On the first occasion he got off a little fluid, about a drachm, stained with bile and without hooklets, nor any marked amount of chloride of sodium. On the second occasion nothing was obtained. In these circumstances, and considering the irregular lumpy enlargement of the organ, it seemed most probable that syphilis was the cause. She was put upon anti-syphilitic remedies, and improved markedly,—the liver diminishing in size, uneasiness disappearing, and her general health becoming gradually better. She left the hospital some time afterwards and got married, and did not again come under Prof. Stewart's observation.

III. Original Communications.

1. *Dr Alexander James* read his paper on PUTRID PLEURAL EFFUSIONS, which appears at page 1 of this Journal.

Mr Caird remarked that he was somewhat surprised that Dr James gave such prominence to pulmonary gangrene as the cause of putrid pleural effusions. He thought the proximity of the liver might be cited as a source of infection, much as in subphrenic abscess. In the course of inoculation experiments some years ago he had found that in certain animals the liver invariably gave rise, on incubation, to an infusion which teemed with organisms and had a foul smell, while other organs under similar conditions were sterile, or at most only contained micrococci. In regard to treatment during operation, he pointed out the dangers of rolling the patient on his sound side, or in moving him greatly where the collection of pus was large, or where it was in communication with a bronchus; and he insisted on the necessity of removing a small portion of rib in such cases for drainage, so as to obviate future trouble should the ribs come together after evacuation. He had found that in putrid empyema recovery often took place in a most astonishing and rapid manner.

Dr William Russell considered that no objection could be taken to Dr James's classification of cases of putrid pleural effusion, but those which were of special interest, and on which Dr James specially dwelt, was that division of cases in which there was no clinical or post-mortem evidence that the putridity was due to lung gangrene. Although this was the case, Dr James, if he understood him aright, seemed inclined to think that these cases were nevertheless due to localized gangrene; if this contention were correct, it would be necessary to explain what became of the gangrenous tissue; and so far as he had been able to follow the paper, this had not been done satisfactorily. Dr James had referred to a paper published by him (Dr Russell) ten years ago, in which he had been bold enough to advance a theory of the possible cause of the putridity, based upon a limited search into the literature of the subject. That paper had been prompted by the record of a similar case by Professors Gairdner and Buchanan of Glasgow in the *Glasgow Medical Journal*—the case being, in their experience, unique. From that time to the present, no important paper on this subject had come under his notice, and he congratulated Dr James on making such an important contribution to the subject, and would draw special attention to the fact that while ten years ago Professor Gairdner, with his long and varied experience, had only seen one such case, we had quite a group of such cases brought together by Dr James, and which had been under his own observation. Whatever view was held as to the cause of the putridity in these interesting cases was, after all, the purely theoretical side; and, as regards the practical side, no sane man could doubt that incision was the rational treatment.

Mr A. G. Miller had listened with pleasure to Dr James's able paper. In reference to Dr James's explanation of possible septic infection in cases in which there was no gangrene or putrefaction, he wished to suggest possible infection from inhalation of organisms. Mr Miller had met with instances of septic suppuration in closed cavities where the only possible source of infection seemed to be the inhalation of drain gas. Might the same cause not act in putrid empyema? Mr Pridgin Teale had published a book on the subject, pointing out that infection of surgical cases might readily occur from drain gas. Mr Miller objected to Dr James's statement that tubercular fluids do not afford good media for the growth of other organisms. From the surgical point his experience was that tubercular abscesses became readily putrid, and the change was always detrimental.

Dr Alex. James, in replying, thanked the Society for the manner in which they had received his paper, and the various speakers for their suggestions. As regards the causes of putrid effusions in the absence of lung gangrene, and in the absence of any channel by which air could gain access, there was room for great difference of opinion, but he thought that Dr Caird's statements best met the difficulty. As regards the theoretical antagonism between tubercular and putrefactive organisms, he was quite willing to accept the statements of Mr Miller and other surgeons. He thought, however, that there might possibly be something in the theory, for, apart from the fact that the pleural effusions in tubercular pneumothorax are so seldom putrid, he had noticed now and again in a few cases of phthisis, that when the spit became fœtid, and the breath smelt foul, the spread of the lung mischief seemed to be lessened, and the patient's general condition seemed to be rather improved.

2. *Surgeon Charles H. Bedford's* paper, entitled THE PATHOLOGY AND TREATMENT OF FURUNCULOSIS, was held as read.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LII.—MEETING VI.

Wednesday, 13*th May* 1891.—Dr BERRY HART, *President, in the Chair.*

I. *Dr Wm. Keiller* exhibited—(*a.*) A POST-MORTEM SPECIMEN OF OLD PERIMETRITIS AND HYDROSALPINX; (*b.*) A five months' ABORTION, showing adhesive peritonitis; (*c.*) An ABORTION with great twisting of cord; (*d.*) A FŒTUS with peritonitis, especially near the spleen; (*e.*) A two months' FŒTUS with hydrocephalus.

II. *Dr Brewis* showed—(*a.*) TWO CALCULI removed from the female bladder by cystotomy. The patient was 48 years of age, and had suffered in previous years from cystitis; these attacks had always yielded to ordinary measures. Her present illness dates from last summer, when she began to be troubled with frequent micturition, accompanied by great pain; frequently the stream was interrupted, and the last drops were sanguineous. She was unable to sit on account of pain, which she likened to a piece of glass cutting her. The urine had an ammoniacal odour, was alkaline, and contained triple phosphates, blood, pus, bacteria, and debris. On passing the sound into the bladder the stones were felt. The urethra was dilated, and two stones were discovered of such size that it was necessary to open into the bladder through the anterior vaginal wall to effect their removal. The stones were found to be composed of earthy and triple phosphates, measured over an inch in diameter, and contained no nuclei. The bladder opening was left unstitched, and ten days after the operation was found closed, and the patient now micturates without pain. The urine is acid and contains no phosphates. (*b.*) A DERMOID TUMOUR OF THE OVARY, containing fat, hair, and sebaceous matter, removed from a patient four days ago.

III. *Dr Thos. Wood* exhibited an ANENCEPHALOUS FŒTUS with an encephalocele. The presentation was a breech. The father and mother were both mutes.

IV. *The President* read his paper on THE INCONSISTENCIES OF THE PRESENT NOMENCLATURE FOR POSITION, which will appear in a future number of this Journal.

Professor Simpson was not quite satisfied with Dr Hart's criticism of the ordinarily accepted definition of positions. Position had reference not only to the transit of the presenting part of the child through the pelvis, but to the relation of the child while still in the cavity of the uterus, for it was often of importance for the practitioner to be able to determine this, as, for example, in a case of placenta prævia where he wished to turn. The proposed change seemed to be mainly desirable in the case of face presentations. These, however, were abnormal varieties of the normal head presentation, and as all the movements were the converse of the movements in vertex presentations, it did not appear to him (Prof. Simpson) inappropriate to have the name of face positions reversed also. The proposed nomenclature seemed more complicated than that which it was intended to replace.

Dr Ballantyne doubted whether an improved nomenclature for the positions of the fœtus would be readily adopted by the profession. The old names had a very tenacious hold. He was not aware that any recent text-books had adopted the suggestions for uniformity in obstetrical nomenclature made at the Washington Congress in 1887.

Dr Berry Hart held the definition Prof. Simpson advocated to be no definition at all, but merely to mean that from the position of the back you could diagnose "position." In saying that change was desirable in face presentations Prof. Simpson conceded the point in dispute.

V. *The President* read his paper on A FIRST SERIES OF TWENTY COMPLETED ABDOMINAL SECTIONS, which appears at page 29 of this Journal.

VI. *Dr Felkin* read his NOTE UPON NINE CASES OF ACCIDENTAL VACCINATION, which appears at page 27 of this Journal.

Dr Buist had been much interested in Dr Felkin's cases. His experience had been more limited, as he could only recall three similar cases in his own practice. They all occurred in nursing mothers who were infected by their children, and showed well-marked vesicles—(1) on the point of the nose, (2) on the chin, and (3) on the cheek. The typical appearance of the vesicles was remarkable, and there was probably some abrasion in each case, as he had tried to inoculate vaccine lymph mixed with blood by simply rubbing it in on the unbroken skin, but had failed to produce vesicles. A fourth case occurred during the experimental inoculation of a monkey with yeast, which apparently produced a typical vaccine vesicle, but the lancet was probably charged with dried lymph. This showed how necessary it was not to employ a vaccine lancet for any other purpose. On the whole, he did not think the accident a very common one, but it might easily be accounted for by the very active nature of fresh vaccine material.

VII. *Dr Wm. Keiller* read his NOTE ON A MODIFICATION OF BARNES' CAOUTCHOUC DILATORS, which appears at page 33 of this Journal.

Professor Simpson thought the Society were indebted to Dr Keiller for his communication, and considered that the modifications suggested in the construction of the hydrostatic relations would distinctly add to their efficiency. The least important change was the lessening of the eye. But it was very important to have a stop-cock that could be adapted to any syringe. And the thickening of the vaginal portion of the Barnes' bag was a specially ingenious improvement, which one only wondered had not been introduced before, and was certainly calculated to facilitate the dilation. The great drawback to all india-rubber implements was their tendency to become fragile when left for a time unused, and, perhaps, it might be found that sheep's bladders kept in an antiseptic solution might be used instead of rubber bags.

Dr P. A. Young approved of Professor Simpson's criticism of the modification of the bags proposed by Dr Keiller. He thought that they would prove useful in practice. He considered the lessening of the size of the eye a mistake, as it prevented the use of a thicker instrument than a sound for the introduction of the bag. He found in most instances that a sound would go through the rubber and break it, and thus prevent the introduction of the bag.

Dr Felkin would like to ask Dr Keiller if he were sure that the bag would not be expelled when a pain takes place? He thought that all the improvements Dr Keiller had made were admirable.

Dr Keiller, in reply, thanked Professor Simpson for his kind criticism, and said he had had the point of the eyelet so strengthened that no ordinary pressure would entail any risk of its perforation by the sound, and the small size of the eyelet rendered it possible to use the smallest bag at once as a method of inducing labour after a slight preliminary dilatation of the os with a tent, the finger, or some form of solid dilator. The fact that it was only the intra-uterine portion of the bag that was distended by inflation rendered its displacement during a pain an absolute impossibility, while in the old form the effect of a pain in hyperdistending the vaginal portion decidedly tended to the expulsion of the dilator.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Therapeutic Action of Double Salicylate of Theobromine and Sodium (Diuretin).—Geisler has made further observations with this substance in eight cases: of these one was in good health, four were heart cases, two Bright's disease, and one cirrhotic liver (*Berlin. Klin. Wochenschr.*), and summarizes his results as follows: —(1.) It raises the blood pressure. (2.) It is not only a diuretic, but also a cardiac tonic. (3.) It acts specially well in cases of circulatory disturbances due to valvular lesions of the heart. (4.) In lesions of the heart muscle its action is much weaker, especially its diuretic action. (5.) In acute nephritis its diuretic action is much more marked than in chronic nephritis; there is increased diuresis and disappearance of the œdema. In both cases the excretion of albumen remains as before. (6.) In the case of cirrhotic liver no diuretic action was observed. (7.) In the healthy man diuresis was increased to some extent. Gram holds that the bromine alone is the diuretic constituent of the compound, but Geisler is of opinion that the salicylate of sodium is also active, as both it and salicylic acid have been shown to have diuretic effects (Huber, *Deut. Archiv f. Klin. Med., etc.*)—*Supplement to British Medical Journal*, 6th June 1891.

Creosote in Diabetes Mellitus.—According to Valentini (*Les Nouveaux Remèdes*, March 8, 1891), creosote, administered internally, may be of considerable service in the treatment of diabetes mellitus. The author reports two cases in which at first four drops of creosote were given daily, and the quantity then gradually increased to ten drops in twenty-four hours. Under the influence of his remedy it is claimed that the sugar disappeared, and did not return even after the patient had again commenced to use starchy food.—*Therapeutic Gazette*, May 1891.

Essence of Cinnamon in Malaria.—Dr Capsus states, in *La Pratique Médicale* for April 7, 1891, that in the hospital in Marquelane, in Turkistan, excellent results have been obtained in the treatment of all forms of malaria by sprays of the essence of cinnamon. Even cases which have resisted the action of quinine and arsenic improved in a few days under this treatment. The spraying is performed several times daily in the hospital wards, and is stated to be much more efficacious than a similar procedure with the essence of eucalyptus.—*Therapeutic Gazette*, May 1891.

THE DANGERS OF CALOMEL IN CONJUNCTIVITIS.—Dr Piedallu reports, in the *Lyon Médicale* for March 29, 1891, that one of his patients having accidentally introduced some ipecac. into the eye, and this being followed by suppuration and a large ulceration of the cornea, he instituted an antiseptic treatment, which was completed by the introduction of a pinch of calomel, with an equal part of powdered milk-sugar. After about fifteen minutes the patient complained of intolerable suffering. There was great swelling of the eyelids, with protrusion of the conjunctiva. On making inquiry, Dr Piedallu learned that his patient for the last six months had taken from 15 to 30 grains of potassium iodide daily, and analysis of the tears showed that they contained large quantities of iodine. A violent caustic combination was, therefore, evidently formed between the calomel and the iodine, with the most disastrous effects; for although the eye was not completely destroyed, vision was almost totally lost. This unfortunate accident is well worthy of attention, so that the repetition of such an unfortunate state of affairs might be avoided. Before calomel is introduced into the eye, inquiry should first be made as to whether the patient has been on iodine treatment.—*Therapeutic Gazette*, May 1891.

INFLUENCE OF COLOURING MATTER OF WINE ON DIGESTION.—Dr Hugonueno has made a number of experiments with artificial digestive fluids, which have led him to formulate the following conclusions (*Répertoire de Pharmacie*, April 10, 1891):—1. All wines without exception interfere with the action of pepsin. Those which are most highly charged with colouring matter, with alcohol and cream of tartar, are the most hurtful. 2. The acidity of new wines is incapable of aiding the action of pepsin. 3. Among the colouring matters artificially and fraudulently introduced into wines, methylin blue, azoflavine, and, above all, fuchsin, interfere with peptic digestion; while the vegetable colouring matters, such as black mallow, elder, and œnoline, also exercise unfavourable action. 4. In removing a part of the cream of tartar plaster removes from wine an element which tends to slow the action of pepsin. Digestion is more rapid, therefore, with plastered wines than with natural wines.—*Therapeutic Gazette*, May 1891.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

THE TREATMENT OF ECZEMA IN ELDERLY PEOPLE.—Dr Bulkley has directed attention to this, the term "elderly people" being held to refer to such as have reached the age of 60. The chief elements of causation seem to be a debility of tissue, rendering it everywhere prone to take on inflammatory or degenerative action; and as an early or internal cause, a certain faulty kidney action. The urine is apt to be scanty, the specific gravity high, and the urates deposited in excess. In the same way deficient action of the bowels is not infrequent. The eruption often varies with the activity or otherwise of these functions. At the beginning of treatment, and occasionally during its progress, nothing gives more relief to the system and the eruption than a pill of blue mass, colocynth, and ipecacuanha. For more constant use, however, one of aloes and iron, as may be needed, before each meal, is better. To remove the defective kidney action, acetate of potass, in doses of 10 to 15 grains after meals, with nux vomica in a bitter infusion, as of quassia, suits admirably, and under its use the eruption diminishes. Iron must be taken sparingly, though it may be given for a time after a course of the above. Arsenic is only of use should a bullous or pemphigoid eruption supervene; then it must be administered freely, and at short intervals. Sedatives are often of the greatest assistance, and are frequently required to secure proper rest at night. Phenacetin in 5-grain doses, taken with hot water on retiring, frequently acts well, the dose being repeated in an hour if necessary. Antipyrin, in 6-grain doses, similarly used, is also of service. Tincture of gelsemium, 10 to 20 drops, with one of tincture of aconite, will secure perfect rest in many cases, even when itching is so severe as to prevent sleep. It may be repeated in an hour. In general the eczema patient is better without any alcohol, unless for a time, in small quantity, in those long habituated to the use of stimulants. In those who are taking less and less exercise, the diet should be correspondingly diminished. The tendency is too often to urge on the patient to take what is commonly called strengthening food, and so the digestive organs are taxed with more than the body requires or can digest, assimilate, and use; and thus the system is loaded with imperfectly elaborated products, while the emunctories are less able than before to rid it of effete substances. For generalized eczema, and that on the trunk and limbs, nothing is more comfortable than the well-known calamine and zinc lotion, to which 2 per cent. of carbolic acid and a little liq. calcis have been added. When more astringency is called for, 2 to 4 drachms of the salicylate of soda may be added to each 8 ounces of the lotion. These are sopped on several times a day, care being taken to avoid chill; and on any oozing point a film of absorbent cotton may be laid, and allowed spontaneously to separate. On more localized patches, with thickening of tissue and much itching, complete relief can generally be obtained by the use of tar and zinc ointment:—℞ Zinci oxidi, ʒj.; Ung. picis, ʒiv.; Cerati galeni, ℥iss. This should be thickly spread on the woolly side of lint, cut to fit the individual patches, and firmly secured with a cheese-cloth bandage, being changed once or twice a day. When the thickening resists the tarry application, a ¼ part of diachylon ointment may be added to the above. If still rebellious, 10 to 20 grains of salicylic acid to the ounce. In eczema of the head and face, the most serviceable application is a tannin and carbolic acid ointment, kept continuously applied,—℞ Acidi tannici, ʒj.; Acidi carbolici, gr. v.–x.; Cerati galeni, ℥j. Washing must often be completely abandoned, even for weeks, the parts being merely wiped with a soft dry cloth. If cleansing or stimulation is absolutely needed, nothing is better than the sapo mollis of the *Pharmacopœia;* but this must be used lightly, diluted with water, the part dried quickly, and the appropriate dressing at once applied. Soda soaps, on the contrary, generally irritate an inflamed and tender skin. Baths are seldom advisable. If taken, gelatin or starch is to be added to the tepid water, and the immersion neither to be too long nor repeated too frequently. Several days between each should elapse. After the bath drying should be effected with heated towels and as little friction as possible, and followed by some medicated application. Even when cured, care must be taken as to returning to ordinary baths, no harsh treatment of the skin being advisable.—*Trans. Med. Soc. State of New York,* 1890.

AN ICHTHYOL VARNISH.—Unna has for some time felt the desirability of having a solution of ichthyol of considerable strength which would dry rapidly, would not irritate the skin, and would be soluble in water. After numerous experiments, he has found the following formulæ to fulfil all indications. In the preparation of the paste, some substance was needed to prevent the starch from being precipitated, and a solution of albumin made concentrated by gentle heat effectually hinders this deposition:—

℞	Ichthyol, ...	40·0
	Starch, ...	40·0
	Solution of albumin, . .	1–1½
	Water, ...	to 100

The constituents must be incorporated in this order:—First, the starch is to be uniformly moistened with the water; then the ichthyol thoroughly rubbed in; and, finally, the solution of albumin mixed with the others. The other varnish is somewhat different. In it carbolic acid replaces the albumin:—

℞	Ichthyol, ...	25·0
	Carbolic acid, . . .	2·5
	Starch, ...	50·0
	Water, ...	22·5

The ichthyol and carbolic acid are dissolved in the water by aid of heat, and with this an equal amount of starch is slowly rubbed up. These varnishes, when smeared on the skin, as on an acne, an acne rosacea, or a lupus erythematosus, dry in course of two minutes, and can be easily washed off without any irritation from friction. Thus they are preferable to the ichthyol collodion, being only inferior to it inasmuch as they do not exercise the same amount of compression which it does. They are, like it, not readily removed by the perspiration, as the zinc ichthyol jelly is apt to be, while they cause no soiling of the bed linen. They are likely to come into extensive use.—*Monatshefte für prakt. Dermatologie,* Bd. xii. No. 2, 1891.

DISEASE ATTRIBUTED TO CLEANLINESS.—Filth diseases are common, and now it appears cleanliness has departed sufficiently from its proper place next to godliness to afflict poor humanity with ills that are hard to bear. In the *Journal of Cutaneous and Genito-urinary Diseases,* Dr Ricketts calls attention to a skin affection found almost exclusively among society women or others who keep the skin scrupulously clean, especially that of the face. There is redness, with scaliness and considerable burning. Exposure to draughts of hot or cold air increases these symptoms. At times there is much pain, causing loss of sleep. The disease is found to be due to soap, water, towels, and scrubbing. The epidermis upon the cheek, brow, and eyelids, being thinner than at any other part of the body, is more easily removed. Therefore the frequent application of simple water, even without the use of the towel, means disaster, especially if soap is used. An excess in the exfoliation of the cuticle exposes the papillæ. which are obliged to protect themselves by exuding serum that afterwards becomes encrusted. This seals the pores of the skin hermetically until the epithelium is restored. In the frantic effort to secure a good complexion this scrubbing goes on with a vigour that would wear out shoe leather. A society belle is said to have confessed to having applied Lubin's powder thirteen times within twelve hours, each time after the face had been thoroughly washed with Pears' soap. Since beauty is largely an affair of complexion—being literally skin-deep, but none the less lovely for all that--it behoves the generous practitioner to come to the rescue and save the skins of the high-minded washed. Instead of soap, Dr Ricketts suggests the use of good olive oil, applied two or three times a day with some soft silk or linen fabric. What is called olive oil—really sweet or cotton-seed oil, or essence of lard—is not the thing to use, but that pure and bland article that southern Frenchmen make in such perfection. It is difficult to secure, but those that seek it can find it. The ancient Greeks knew soap, but among them it was used for renovating fabrics, especially those of wool, but not for cleansing the skin. Soap would not be so injurious if it was perfectly pure, but a perfectly pure soap is the substance of things hoped for. Lime, gypsum, heavy spar, stearite, and pipe-clay are some of the chief adulterations, and these things are unfavourable to a milk-of-roses or peaches-and-cream complexion. The happy possessor of a delicate skin must suffer to be beautiful—it will pay—and forego the luxury of too much water and the accessories of the bath. The delicate skin must be petted, not combatted as though it were an enemy. Gentle measures here, as in the sterner affairs of life, bring about harmony and satisfaction. The admirers of coral lips and rosy cheeks—there are many in the profession—have a new gospel to preach, and that is, temperance in the matter of cleanliness.—*New York Med. Journal*, May 16, 1891.

Treatment of Herpes Zoster.—Smith of New York has met with cases of intercostal zoster where the pain was relieved and the congestion disappeared when wet cupping was employed as near the point where the affected nerve emerges from the spinal cord as possible.—*New York Medical Review*, April 11, 1891.

The History of Tuberculin.—In four acts.

Act 1.—Eureka.
Act 2.—Vici.
Act 3.—Ave, morituri te salutant.
Act 4.—De mortuis nil nisi bonum.
Epitaph.—Fuit.

—*Medical Press and Circular*, May 21, 1891.

MEDICAL PERISCOPE.

By Francis Troup, M.D.

Berlin. Klin. Wochenschrift, 1891, No. 19.—Baumgarten, in conjunction with Dr Gramatschikoff, has been, since the end of December 1890, engaged in a great series of researches as to the influence of Koch's remedy upon the inoculation-tubercle of rabbits. The spot selected for infection was the anterior chamber of the eye of Albino rabbits—firstly, because it affords so favourable a field for microscopic observations; and, secondly, because he himself, from former investigations, was so well acquainted with the behaviour of intra-ocular inoculation-tuberculosis.

In the animals affected with beginning eye-tuberculosis, the introduction of smaller (0·05 g.) or larger (up to 1·0 g.) doses of the lymph always produced the eclatant local and general reaction described by Koch. The tuberculous globes, and generally also the eyelids, fall into a state of more or less decided hyperæmia, according to the more or less extensive development of the tubercular process, to which hyperæmia a pronounced inflammatory exudation, as expressed by muco-puriform secretion of the conjunctiva and inflammatory dimness of the refracting media, is soon superadded. The body temperature rises to 40° and 41° C. or more. After the first reactions the original condition of the eye returns in the intervals between the injections, the tubercle nodules, which had been obscured by the inflammatory clouding, reappear with all their old distinctness and without any discernible alteration; after the later injections, however, the inflammatory disturbance caused by the reaction remains even during the intervals, and gradually brings about a degree of opacity of the cornea and exudative obscuration of the iris, such as is not present at the same date in the control eyes. Consequently, the iris-tubercle is more and more withdrawn from microscopic criticism. But the cornea, even better than the iris, allows the influence of the continued injections to be seen on tubercular nodules present on it, they lose their sharp definition, become broader and flatter, take on a decidedly yellow tint instead of their original whiteness, soften, and ultimately, if on the surface, ulcerate. The further progress and the end-result were different according to the character of the diseased process, which again depended on the degree of virulence of the inoculated bacilli. In animals inoculated with virulent pure cultivations, or *perlsucht* tubercles, or virulent tubercles obtained from inoculated rabbits, the disease marched unrestrainedly on, even in cases where the injections were commenced the moment the initial tubercle eruption began, and continued at intervals of two or three days in big doses (0·5–1·0 g. of the original lymph). The tubercular bulbs of the animals treated by the lymph were more rapidly destroyed than those of the control animals, the treated animals emaciated more and died earlier than the control ones, and showed on section, if death was not premature (through exhaustion or intoxication), the presence of metastatic tuberculosis of the same extent and degree of development as the corresponding control animals.

Among the animals inoculated with considerably weakened bacilli (obtained from the tubercles of a peculiar form of inoculation-tuberculosis produced by the inoculation of bacilli which had been kept a long time outside the living body in contact with iodoform) the tubercular process in one passed over into healing. This series of rabbits numbered five: three were injected and two served as control ones. The three subjected to treatment presented different degrees of intra-ocular tuberculosis, in consequence of the injection of differing amounts of the inoculation stuff, at the time of beginning the treatment. The least diseased one was healed of its eye tuberculosis; in the other two, notwithstanding continuous large doses of the lymph, the tubercular process could not be brought to a cessation. At the time of beginning the injections in the animal cured it was only at the site of inoculation that any manifestation of the tubercular process was visible; the tubercular portion of the iris had prolapsed and broken through the corneal incision, and presented the form of a lentil-sized, reddish, spongy nodule of tissue in whose interior it was easily seen that whitish tubercle knots had taken up their abode: the rest of the iris was free of tubercle. The edges of the corneal incision were cheesily infiltrated, otherwise the cornea and conjunctiva were quite normal. During treatment the animal, which was a very strong one, emaciated like the rest, resisted, however, the large doses of the lymph which were used, and the eye affection became permanently well with the exception of a tiny cystoid scar at the site of inoculation on the limbus corneæ, and a slight upward distortion of the pupillary border.

After the stoppage of the injections—6·9 g. of the original fluid were injected—the animal quickly regained its pristine plumpness and vigour. Of course, till a section is made, it cannot be decided whether the animal has developed metastatic tubercles, and whether they are cured or not. However, it is not probable that any internal tubercle exists, as it does not now react to the lymph.

It must be added, however, that the control animal is now in good nutritive condition, and the eye affection in it also is undoubtedly healing spontaneously, although more slowly.

The other animals of this series ended, in spite of continuous treatment, with phthisis of the bulb and subsequent metastatic tuberculosis, as did all the other unhealed ones.

The microscopic investigation of the ocular bulbs, etc., of the animals experimented on has given the following actual results as to the influence of Koch's remedy on the tubercular process:—

The remedy causes an acute exudative inflammation in the territory of tubercularly diseased tissues, which touches, not the tubercle, which being without vessels can neither become hyperæmic nor produce exudation, but the surrounding vascular tissues, particularly the newly formed granulation tissue in which the tubercle nodules are embedded. This inflammation, when injections are long prosecuted, takes the character of a dissecting, eliminating suppuration by which the tubercle nodules are loosened from their surroundings, and, where this is on a free surface, extruded. By soakage in the exudation liquids and abundant immigration of polynuclear leucocytes, the nodules themselves are converted into soft foci resembling abscesses, which metamorphosis favours the loosening and extrusion of tuberculous masses. *The tubercle bacilli are not harmed in the least by the Koch treatment;* even after months of treatment they are to be found in the eye-bulbs in the same forms, the same virulence, the same arrangement and numbers as in the control-eyes. A few preparations seem to show that under the influence of the treatment, *an increased multiplication of the bacilli takes place,* but this point still wants further elucidation. It is a certainly observed fact that in animals treated by the Koch remedy the tissues not yet infected *acquire no immunity* against infection with tubercle bacilli. This is testified, in the first place, by the fact already mentioned, that tubercular nodules formed metastatically in internal organs in spite of early and persistent treatment with large doses (to the collective amount of 7 to 12 g. of the original fluid per animal—quantities, which, calculated for the weight of a grown man, would amount to about 100 to 180 g.); further, the experiment directly made, which proved that, during the treatment, subcutaneously inoculated animals acquired typical tubercle nodules at the site of injection.

Ibidem, 1891, No. 20.—Drs Troje and Tangl, assistants in Baumgarten's Institute in Tübingen, relate how the bacilli of tubercle may be weakened in virulence by iodoform, and claim that iodoform is for tubercle bacilli a real disinfector and possesses a directly poisonous power over them. They also claim to have caused the characteristic macro- and microscopic picture of *perlsucht* in rabbits by inoculation of bacilli thus enfeebled, and so to have demonstrated that the bacilli of *perlsucht* are not different from tubercle-bacilli, save that they are less virulent by passage through the body of the ox. Furthermore, by this process of weakening the bacilli they claim to be able to produce in rabbits a disease which by its chronic course (three-fourths of a year), by its limitation to lungs, bowel, and lymphatic glands, and by its formation of large cavities in the lungs, imitates the lung phthisis of mankind more closely than has hitherto been attained in inoculation tuberculosis. They also by means of the weakened bacilli could produce typical cold abscesses of most pronounced torpid character.

PERISCOPE OF TUBERCULOSIS.

By R. W. Philip, M.A., M.D., F.R.C.P.E., Assistant Physician to the Royal Infirmary, and Physician to the Victoria Dispensary for Consumption and Diseases of the Chest, Edinburgh.

Reference has already been made in the Journal to the publication of the German official reports on the efficacy of Koch's remedy, and a *résumé* of its contents was given. But the subject was submitted for more "free and easy" discussion at the tenth annual meeting of the German Congress for Internal Medicine, which was held at Wiesbaden in April, and at the twentieth meeting of the Surgical Congress in Berlin. The general conclusions to be derived from a careful perusal of the reports of both gatherings is that the subject is not yet ripe for anything like final decision. Such discussion is not without value in so far as the comparison of different methods of exhibition may aid in giving greater precision and, perhaps, uniformity in the administration of a potent and, therefore, dangerous agent. But it must be admitted that the wider conclusions which have been adopted in many quarters, on both sides, are shown by these discussions to be premature.

Dr Curschmann, who introduced the subject at the former gathering, rightly emphasized the one central, indisputable fact, that in Koch's remedy there was offered for the first time an agent possessed of specific properties in relation to tuberculous tissue—a fact which has sometimes been unhappily ignored in the midst of the more trifling discussion to which the discovery has given rise.

Prof. v. Jaksch maintained the diagnostic value of the fluid. Twenty-eight cases which he had observed from this point of view proved that by its means very limited tubercular foci could be discovered. It was the exception to find tubercular subjects which did not react, or to obtain a reaction in undoubtedly non-tubercular subjects. From the therapeutic point of view, his experience was that advanced cases of pulmonary tuberculosis did not benefit. There was no evidence to prove that their unsuccessful course was prejudicially determined by the fluid. Less advanced, but pronounced cases, improved in the majority of instances. Still slighter cases improved in every instance. No important complications had followed the use of the remedy, nor had bacilli been detected in the blood. Several cases of lupus and other superficial tubercular manifestations were markedly improved or cured.

Prof. Ziegler thought Koch's statement regarding the necrosis of tubercle, which followed the exhibition of tuberculin, on *à priori* grounds improbable. The fluid more probably acted on the neighbouring tissue. Inflammation resulted, with the characteristic phenomena of diapedesis and suppuration, which led to the destruction of tubercle. Cure might be expected from the casting-off of tubercle, from its degeneration, absorption, or encapsulation, or, less probably, from its conversion into normal tissue. As the fluid did not destroy the bacilli, there was danger of their dissemination into other parts by different routes, or of the dissemination of the resulting detritis. But there was no proof that further tuberculosis had been thus produced in many instances where this effect had been attributed to tuberculin.

Prof. Heubner recorded his experience that children are not more susceptible to the influence of tuberculin, in small doses, than adults. Early tubercular manifestations, as occurring in the young, were generally quickly removed by the fluid, *e.g.*, conjunctivitis, keratitis, eczema. In the very commonly occurring glandular conditions its value was very limited, and in more generalized conditions its use was dangerous from dissemination or from accidental consequences.

Dr Moritz Schmidt maintained, from an experience of some sixty cases of laryngeal tuberculosis, that tuberculin acted more favourably than any hitherto known remedy. Of thirty-nine slight cases, eighteen were cured. Of twenty-two more advanced conditions, seven were cured and one was improved. As a rule, it gave rise to swelling (but never so great as to require tracheotomy), a gray-white deposit on the surface, sometimes the formation of fresh ulceration, with subsequent cicatrization.

Dr Dettweiler, of the Falkenstein Sanatorium, had tested tuberculin during four months in 128 cases. His results did not compare favourably with the ordinary results obtained at Falkenstein (as judged by the statistics of the past fifteen years). Tuberculin, however, exerted an action in tubercular cases different from any other agent hitherto known, the exact manner of its action varying in different cases. Some undoubted cases of tuberculosis did not react. There were no serious risks, but the results were so irregular as to cause anxiety. From the curative point of view it might be more efficacious in smaller doses.

Dr Sonnenburg had found it a valuable accessory in pulmonary surgery.

Prof. v. Ziemssen expressed the opinion that the general result of his experience with tuberculin was favourable to its value. He believed that a modification in the method of its use, and, perhaps, a better separation of toxic substances from the fluid, might further its efficacy. Cases doing well at first might suffer through the exhibition of unnecessarily large doses. The increase should be slow.

Dr Fürbringer recorded the results from the Friedrichshain Hospital, Berlin. Out of more than one hundred cases, five per cent. lost all symptoms, forty showed an unusual degree of improvement, thirty-five improved slightly, twenty-five did not improve or grew worse, while fifteen died. Latterly, as he had been able to select his cases better, the results had been more satisfactory.

Dr Naunyn had meanwhile abandoned the treatment, notwithstanding favourable results, on account of the irregularity of the reaction and the risk of disaster, whose immediate cause was not evident, depending rather on the individual than the dose.

Dr Cornet's results had been favourable. His experience extended over more than four hundred cases. He had used both large and small doses, and had seen no serious results follow the larger. His examinations of the blood for bacilli had yielded a negative result. When tuberculin was used by means of inhalation, the reaction obtained was more marked than when it was used subcutaneously.

Dr Schultze had given up the method on account of the uncertainty of his results.

Dr Wolff of Görbersdorf had found that good results had followed the combined climatic treatment at Görbersdorf and the use of tuberculin.

Dr Tarber of Davos supported this view.

A number of other physicians expressed opinions of similar tendency, some presenting relatively favourable and others opposing reports.

The discussion at the Surgical Congress assumed a more uniformly hopeful tone. The main issue was especially emphasized, that the discovery was one of the greatest of modern times, inasmuch as for the first time they had an agent which, when injected into the human subject, passed away without demonstrable disturbance if the patient were non-tubercular, but set up a special kind of inflammation, with accompanying fever, in tubercular patients. The discovery unveiled a wide and hopeful vista. Even if the road to the goal were not clear, there was a clear indication that such a goal might be reached.

Prof. Bergmann indicated that his results, though not so brilliant as first enthusiasm might have anticipated, were such as to encourage a prosecution of the method, in the hope that their toil would not be in vain.

Dr König expressed the same view, and hoped the study of the action of tuberculin would be carefully maintained. He now used much smaller doses and at greater intervals than at first, with better results.

Messrs Schede and Lauenstein of Hamburg reported satisfactory results from its use. As the result of a large experience in the Hamburg Hospital, Schede believed that Koch had made an invaluable addition to their surgical armamentarium. He attributed the varying and irregular results which had been reported to the variety of administrators. They must endeavour now more accurately to formulate how the agent was to be used. Cases of grave disease must be excluded from treatment. An outlet must be provided for disintegrated tissue. Probably the larger doses, at first recommended on the authority of Koch, must be departed from. In their place small, regulated doses must be exhibited, and febrile reaction avoided as much as possible. In his practice patients were generally injected on alternate days, and the dose was gradually increased.

The general feeling of the Congress was that the investigation of the method should be continued.

The discussions at the Medical Society of London and at the Medico-Chirurgical Society of London, which were inaugurated by the reading of the comprehensive papers of Dr Heron and Mr Watson Cheyne respectively, have been reported fully in the weekly papers. A perusal of the communications themselves, and of the succeeding discussion, strongly emphasizes the view already indicated, that it is distinctly premature to attempt to offer a final opinion on the practical outcome of so evidently important a pathological discovery. This result can only be hoped for by the quiet, patient pursuit of those means which are most likely to ward off attendant dangers which have been reported. But, in fairness to the discoverer, care must be taken that these dangers, while present to our minds, are not allowed to loom more strongly than do similar attendant dangers in connexion with several of the more potent remedies which the physician or surgeon is daily in the habit of employing.

CONGRESS FOR THE STUDY OF TUBERCULOSIS.—The Second Session of the Congress for the Study of Tuberculosis will be held in Paris from July 27 to August 2, under the presidency of Professor Villemin. The subjects for discussion are:—1. The Identity of Human Tuberculosis and that of the Lower Animal. 2. The Bacteriology and Pathology of Tuberculosis. 3. The Hospital Treatment of Tubercular Patients. 4. The Prophylaxis of Tuberculosis, Human and Animal. 5. The Agents Destructive of the Tubercular Bacillus without Injury to the Living Animal, from the point of view of Prophylaxis and Therapeusis.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

THE WLADIMIROFF-MIKULICZ OPERATION.—Prof. Ollier, in a paper derived from the forthcoming third volume of his *Treatise on Resec-*

tions, gives his views on the operative treatment of disease of the posterior tarsal bones. While accepting this operation in principle, it is one which he has not yet had occasion to practise, so greatly does he limit its application. He considers its principal indication to be destruction (by any process) of the skin of the heel, but thinks it might prove useful in adults where the foot is apt to prove useless after ordinary tarsectomy, the period of bone reproduction having passed. In young persons, and indeed in cases of tarsal disease generally, Ollier has preferred either the operation of "posterior tarsectomy" (resection of the calcaneum and astragalus), or amputation by heel flap (modification of Syme's method), according to the conditions which he met with on examination of the parts. The increased length of limb claimed as an advantage of the Wladimiroff-Mikulicz operation, Ollier looks upon as a factor only exceptionally coming into consideration; for even if a considerable extent (*i.e.*, 6 centimetres, or even more) of the bones of the leg must be sacrificed, he has found the method of amputation by heel flap to give most satisfactory results. The digitigrade condition of the limb is an obvious weakness of the method, though Ollier admits that most patients seem readily to accommodate themselves to it. Ollier has devised such an incision for the operation as shall save the posterior tibial nerve and other structures from injury—an incision along the outer border of the tendo-Achillis, 6-8 centimetres in length, carried to the point of the heel and thence along the sole of the foot, inclining slightly outwards, so as to avoid injury to the external plantar vessels and nerves, which should be carried, if exposed, to the inner side. The incision being carried down to the bones, the calcaneum and astragalus are cleared and removed, and thereafter the anterior tarsal bones and the bones of the leg successively projected from the wound, and the articular surfaces sawn off; one can at pleasure remove redundant soft parts, preserving the nerves and vessels. In support of his preference for the "posterior tarsectomy" Ollier embodies in the paper records of eight cases in which this method of treatment was adopted. Of these, four are completely cured, one is still recent, and three died from subsequent tubercular or other affections after successful operation. In these cases Ollier has obtained a plantigrade foot in good position, and movable. The calcaneum is replaced by an osseous mass, through the development and alteration of which gradual improvement takes place in the form of the foot during several years. The incisions practised in this operation must vary according as the astragalus or calcaneum is the first bone to be attacked. In amputating the foot Ollier preserves the periosteum of the heel flap, thus rendering, in his view, the procedure simpler, safeguarding very fully the tibial vessel, and procuring a stump which gives better support and a more elegant walk than does the Wladimiroff-Mikulicz operation. The newly-formed mass of bone in the stump may move to a certain extent upon the end of the bones of the leg, and adds to the length of the limb. Ollier also divides the tendo-Achillis, using the resulting wound for drainage.—*Revue de Chirurgie,* April 1891.

Dr E. Kummer (Geneva) has tabulated 54 cases in which the Wladimiroff-Mikulicz operation was done between the years 1871 and 1889, in patients at all ages from 9 to 52. In 38 cases the indication was caries, in 9 wound, in 2 ulcer of the heel, in 3 sarcoma, in 1 shortening of the limb, and in 1 the reason for interfering is not given. In 17 cases out of 27 in which note is made on the point, solid union was obtained; in 10 it was not. Kummer believes that while indications exist for the procedure, the functional result is inferior to that which follows resections of the tarsus, one objection urged being the digitigrade condition of the foot.—*Ibid.*, March 1891.

Extirpation of Seminal Vesicle and Vas Deferens.—M. Roux (Lausanne) considers that to be effective in strumous disease of the testicle, surgical intervention must be radical, and he therefore removes in such cases along with the testicle the corresponding vas deferens and seminal vesicle, seeing they are, in his experience, almost always affected together with the testicle. This treatment he has twice carried out, first practising excision of the testis, and separating the vas deferens as far up in the inguinal canal as possible; then reaching the prostate by perineal incision, and freeing from it the seminal vesicle, which he carries into the wound by the pressure of the left index finger placed in the rectum, he removes the latter, drawing out with it the remainder of the vas deferens. The first patient was cured, the second suffered from consequent fistula and died of tubercular meningitis, after injection of Koch's fluid.—French Surgical Congress, 1891; reported *Revue de Chirurgie,* May 1891.

Resection of Lung for Early Tubercular Disease.—M. Tuffier, on May 5th, 1891, performed the operation on a male patient aged 25. By an incision in the second intercostal space the parietal pleura was reached and separated towards its apex from the ribs. On opening the pleura the apex of the lung in which the nodule of disease could be felt was drawn out through the wound, and a silk ligature passed round it so as wholly to include the nodule in the portion which was severed. The stump was stitched to the deep surface of the second rib, and the wound closed layer by layer, the patient making a good recovery. M. Tuffier only claims as the result of this interference the removal of a localized lesion, not a cure of the tubercular disease.—*Semaine Médicale,* May 16, 1891.

Operative Treatment of Perityphlitis.—E. Sonnenburg discriminates between circumscribed suppuration and diffuse sero-fibrinous exudations in these cases, and only advocates operative treatment in the former group, in which he would interfere by operation, whether threatening symptoms exist or not. In cases where the pus cavity is deep-seated or obscure, Sonnenburg recommends operation in two stages. On the second or third day of illness he incises freely down to the peritoneum at the part where tenderness and resistance most distinctly lead one to suspect the presence of the pus; then, after an interval, varying in his cases from one day to five, he explores with a hollow needle, and daily repeats the manœuvre till the abscess cavity is found. He believes that the primary incision not only enables one more readily to determine where the pus lies, but also in a measure brings about "pointing" from diminution of the pressure of the wall at the part. The punctures, so far from doing injury, provoke, he thinks, adhesions which will shut off the peritoneal cavity. Sonnenburg advises against removal of the appendix vermiformis if at all adherent, though regarding the step as theoretically the correct treatment.—*Centralblatt für Chirurgie*, No. 19, 1891.

NEPHROTOMY OF THE LEFT KIDNEY AFTER REMOVAL OF THE RIGHT.—Mr Clement Lucas showed this case at the Royal Medical and Surgical Society of London on January 13th, 1891. In July 1885 the right kidney was removed for calculous disease with success. In October of the same year, on account of symptoms of obstruction of the ureter, Mr Lucas cut down on the remaining kidney and removed a calculus from the pelvis. The patient was cured in ten weeks, and has since remained well.

ANTISEPTICS IN LITHOTRITY.—M. Guyon speaks strongly on this subject, advising thorough cleaning of instruments, external genitals, urethra, and bladder before interference; and as to washing out the bladder, insists on the necessity for a current or rush of fluid, not merely filling the viscus. If the urine be healthy, he finds boracic solution (4 per cent.) adequate; but if it be turbid, he relies most upon a solution (1-1000) of nitrate of silver, used once or twice daily till the waters be of normal acidity, and limpid; thereafter he uses boracic. Asepsis Guyon believes to be a great safeguard against the subsequent formation of phosphatic deposits and calculi. —*Annales des Maladies des Organes Génito-Urinaires*, May 1891.

TREATMENT OF ERYSIPELAS.—Dr Ch. Ulrich reports the results given by three modes of treatment adopted in a series of 89 cases of facial erysipelas, viz., ice compresses, tar preparation, and ichthyol collodion. He found that, having respect to the spread of the rash, the formation of bullæ, recrudescence, and the duration of the disease, the third proved the most effective means of treatment. He insists on the importance of applying the collodion in a broad band, beyond the edge of the rash. The collodion consists of sulpho-ichthyolate of ammonium 5·00, æther 5·00, collodion flexile 10·00.—Dresden, 1891.

OPERATIVE TREATMENT OF SPASMODIC WRY-NECK. — Dr Keen (Philadelphia), in a case of this nature, practised division of the posterior divisions of the three first cervical nerves, reached by dividing the trapezius and complexus, and following guiding branches (sub-occipital, great occipital, and nerve to splenius muscle) to the roots. The incision was a transverse one from the middle line posteriorly towards the lobe of the ear, and half an inch below the level of the latter.—*Annals of Surgery*, January 1891.

THE TONSILS WITH REFERENCE TO THE ABSORPTION OF INFECTIOUS MATERIAL.—Dr Hodenpyl (New York), from investigation on this subject, concludes—1. Soluble or insoluble materials are not absorbed by the mucous membrane of the mouth or pharynx, or by the tonsils, except to a very slight extent. 2. It is the epithelial covering which prevents absorption taking place by the tonsils. Substances in solution which have found their way beneath the epithelium may be rapidly taken up by the lymphatics and carried into the general circulation. 3. Soluble and insoluble foreign material in the tissues in the immediate neighbourhood of the tonsils are not readily and at once taken up by them. 4. Soluble and insoluble foreign materials in the substance of the tonsils are not thrown off by the surface, but may either remain in the tissues or may be carried off by the lymphatics to other parts of the body.—*The American Journal of the Medical Sciences*, March 1891.

EXTIRPATION OF THE SEMILUNAR GANGLION.—Prof. Edmund Andrews (New York) proposes the following method as possible of performance without great risk,—division of the ramus of the jaw, and turning it out so as to identify the 5th nerve, and follow it up to the foramen ovale; enlargement of the foramen to admit a small curette, whereby the ganglion may be broken down.—*Medical News*, Feb. 14, 1891.

OPERATIVE TREATMENT OF CONGENITAL DISLOCATION OF THE HIP. —Schüssler records a case of this kind, in which he cut down upon and removed the head and a wedge from the neck of the femur, also chiselling out an acetabulum in which the upper end of the femur was placed. The patient can (six years after) walk without pain and sit upright, and has a limb 1 c. longer and possessed of freer movement than before operation, when the thigh was much adducted.—*Centralblatt für Chirurgie*, No. 3, 1891.

FIBRO-MYOMA OF THE RECTUM.—Dr Senn (Milwaukee) removed a tumour of this nature, weighing 12 lbs., by laparotomy. It was covered by peritoneum, except where attached to the rectum, and at the margin of the attached surface could be traced between the mucous and serous coats of the bowel. The condition is one of extreme rarity.—*The Weekly Medical Review*, March 21, 1891.

Part Fifth.

MEDICAL NEWS.

Treatment of Primary Railway Injuries.—"The Immediate Care of Persons Seriously Injured" was the subject of the following remarks by Dr W. A. M. Wainwright, of Hartford, Conn., at a meeting of the Hartford County Medical Society held on the 25th of April:—"From the records of the Hartford Hospital, I find that in the past ten years 44 subjects of railroad injuries have died within twenty-four hours after admission: in 1881, 2; in 1882, 4; in 1883, 8; in 1884, 4; in 1885, 3; in 1886, 4; in 1887, 2; in 1888, 3; in 1889, 7; in 1890, 7: total, 44. Many of this number were admitted in a state of hopeless collapse, and died within a few hours, there being no possibility of doing anything for them except to relieve their sufferings as far as possible. Others have succumbed to the added shocks of an operation, performed as a last, but almost hopeless resort upon a patient injured hours before, and almost exhausted by suffering, exposure, and loss of blood. I do not wish to convey the impression that all such patients die after they get into the hospital—far from it. The records will show many cases of recovery when at the time of operation death seemed very near, and was only kept at bay by hospital care and nursing. But I am talking of the lost, not of the saved, and I firmly believe that the lives of many of these poor fellows might have been saved if they had been properly cared for at the places where the accidents took place, and not immediately moved to the hospital. If this statement is true of the forty-four cases sent to the Hartford Hospital, or even if it is true of only a small per cent. of the number, you can readily imagine how great the annual sacrifice of human life would prove to be if the total number of such cases admitted into all hospitals of the country could be computed. What is the use, and why is it not an abuse, to move a poor fellow, 'wounded to the death,' just for the sake of getting him to a hospital, and having him die there before he can be taken from the stretcher upon which he is brought in? A more merciful plan would be to let him lie and die upon the railroad bank. Every hospital surgeon will, I think, recognise the following picture:—He is called to the hospital, perhaps in the dead of a cold winter's night, by a message, nowadays usually sent through the telephone, telling him that 'a railroad accident has been brought in.' He finds in the accident room a poor fellow with a crushed leg, bloody and bleeding, a piece of rope twisted over a stick upon the thigh—constricting it so tightly that it has itself almost performed the amputation—the broken bones protruding, the crushed limb dangling with the heel probably turned upward; pulseless, with the cold sweat of death upon his brow; too far gone to stand the additional shock of an operation. He must be left to die. The surgeon finds upon inquiry that the injury was received perhaps a half-dozen hours before, and thirty or forty miles from the hospital. The unfortunate victim has had to lie for several hours in pain and suffering waiting for the regular train to come along, and like as not has had to be moved from one train to another to make a necessary connexion, to say nothing of the final journey in an express waggon from the city station to the hospital. Does it not seem to you that the only chances which this man had for life have been sacrificed by sending him to the hospital? Can you blame the country practitioner (when the accident occurs at a distance from the city) for wanting to get such cases off his hands as soon as possible, having but little experience in this class of surgery, and believing that better care will be obtained in the hospital. Moreover, the physical condition immediately after an injury is often not seriously impaired, and the local doctor does not take into consideration what that condition may be after hours of pain, exposure, and loss of blood. I think the custom is all wrong, and that many lives which are now sacrificed would be saved if it could be changed. If necessary, I would have the railroad companies compelled by law to take better and proper care of persons injured by their accidents. I have no doubt, however, that the law of humanity would be quite as binding and as willingly obeyed if the subject could in a proper way be brought to the attention of their boards of directors. I would have the profession instructed to insist that the injured person should only be moved to the nearest comfortable quarters (and these can be found wherever a railroad runs), and not bundled off to the nearest hospital, which may be twenty or thirty miles distant. If the doctor called in the emergency does not feel equal to the task of doing what is necessary, let a competent surgeon be sent for. If an operation is to be done, let it be done then and there, and afterward, if desirable, let the patient be moved to the hospital for after-treatment. Twenty-four or forty-eight hours would usually decide the question of removal. The risk to the lives of the injured will be, in my judgment, much less in moving them after an amputation, with a stump carefully and antiseptically dressed, and after they have recovered from 'immediate shock,' than it is in removing them in the crushed and mangled and exhausted condition in which they are often received at the hospital. On the other hand, if, in the judgment of the experienced surgeon, an immediate operation is not justifiable, let the last few hours of the patient's life be made as comfortable and free from pain as human skill can suggest, and do not let him be submitted to the unnecessary suffering of a long and tedious journey to a hospital, thereby oftentimes taking away the only chance of life. In many cases, I believe, an operation which might with safety and success have been performed at the place where the injury was received, and soon after its occurrence, is rendered impossible by the delay and the physical exhaustion incident to the journey to the hospital."

From Vienna we have received the first number of a new journal edited by Dr W. Winternitz. It is called *Blätter für Klinische Hydrotherapie und verwandte Heilmethoden*, and deals not only with hydro-therapeutics, but also with massage and medical gymnastics, as well as dietetic "cures."

Dr Debout-D'Ésterees sends us a lecture he delivered before the delegates of the *Société Française d'Hygiène*, on Contrexéville. He strongly recommends the waters in cases of gout, gravel, diabetes, chronic cystitis, and anæmia.

Since we drew attention to hypnotism rather more than a year ago, it is satisfactory to know that the subject has received considerable attention. The British Medical Association has a Committee appointed to investigate the subject, and on all hands we notice that interest and criticism has been aroused. Drs Cruise and Kingsbury lately read two admirable papers on hypnotism before the Royal Academy of Medicine in Ireland, and the discussion which followed clearly proved that the study of the subject is gaining ground.

Tabloids of Compressed Quinine Bisulphate.—Messrs Burroughs, Wellcome, & Co., of London, the well-known chemists, have sent us a sample of their "Tabloids," and we have pleasure in highly recommending them to the notice of our readers. They are very soluble, and most convenient for carrying, and must insure accuracy of dose. Each one contains 3 grains of bisulphate of quinine.

Malto-Carnis (Caffyn).—We have received from the Liquor Carnis Co. a sample of the above. It is pleasant to take, nutritious, and is likely to furnish another valuable substance for invalids.

OBITUARY.

THE LATE DR STRUTHERS, OF LEITH.

The death of Dr Struthers, of Leith, will occasion much regret in the medical profession as well as in the community among whom his life was spent. The career of one who attained such success and such high respect is well worthy of study. Dr James Struthers, born in 1821, was the eldest of three sons of Alexander Struthers, of Brucefield, near Dunfermline, all of whom entered the medical profession. He had received an excellent general education privately with tutors under his father's roof. To the usual classical and mathematical training he had added the modern languages, French, German, and Italian. These, especially the two former, he read and spoke in after life, and found useful not only for the foreign literature of his profession, but in a special manner by their enabling him to communicate easily with numerous foreign patients at the port of Leith. Before beginning the study of Medicine he gave a year to the study of the physical and natural sciences at the University of Edinburgh. At this time he had a severe attack of small-pox, although his arm bore the vaccination mark. He was seen by Dr Abercrombie in consultation, who remarked that he had not for a long time seen a case of pure unmodified small-pox. Dr Struthers had a narrow escape for his life, but bore extremely little appearance of having had such an attack. He commenced medical study in November 1844. Monro *tertius* was still Professor of Anatomy, but Dr Struthers, like most students under that regime, had his anatomy, which was a favourite study with him, in the Extra-mural School, under Dr Handyside and Mr Spence. Throughout all his course of study Dr Struthers was an engrossed and thoughtful worker, availing himself closely of all the means of practical study, clinical and pathological, in the Royal Infirmary. He graduated as M.D. in 1848, and received on the occasion a gold medal for his thesis "On the Anatomy and Physiology of the Human Skin." The thesis contained the results of original observations in the histology and functions of the skin, the value of which was recognised by John Goodsir, who had now become Professor of Anatomy, and by Allen Thomson, who was at that time Professor of Physiology in Edinburgh University. Among Dr Struthers' fellow-graduates, who received the same high honour, occur the names of the late Dr Rutherford Haldane, and Professor Sir William Aitken, now of the Army Medical School at Netley.

In the year following his graduation, Dr Struthers was Demonstrator of Anatomy in the Extra-mural School along with his brother John, and continued his clinical and pathological experience at the Infirmary, where he had already been Assistant Pathologist and Clinical Clerk. These two years, 1847 and 1848, saw the great epidemics of typhus and cholera in Edinburgh. We have heard Dr Struthers mention that in three months, in 1847–48, he had no fewer than two hundred post-mortem examinations to make. His chief fellow-worker at this time was the late Professor Sanders. They had early acquired a mastery in the use of the microscope, at that time an exceptional accomplishment, and became authorities in the use of the instrument in the clinical and pathological work of the Infirmary. Dr Struthers' chief teacher in Clinical Medicine was Professor Alison, of whom he was a favourite pupil. He had a profound regard for that great physician and benevolent man, and between the two in after years there was much attachment. It will be seen that Dr Struthers thus, in his anatomical, pathological, and clinical training, laid a solid foundation for true success in the practice of his profession.

Dr Struthers' settling in Leith was so far accidental. When just about to make a beginning in Edinburgh he was asked by Dr Alison to take charge for a short time in the autumn of 1849 of the practice of Dr Bruce of Leith. Dr Bruce died a few weeks afterwards. The practice rapidly increased, and Dr Struthers, having become busy and attached to his Leith patients, continued among them. He could not be persuaded to return to Edinburgh, though on more than one occasion his intimate friends earnestly urged him to do so. That he would have taken a high position as a physician in Edinburgh those who knew his solid professional attainments and sterling character could have no doubt; but his reply always was that he was contented and happy, had as much as any man ought to wish, and had no intention of moving. Dr Struthers became a Fellow of the Royal College of Physicians in 1861, was one of the Examiners in Anatomy in the College, and afterwards one of the Examiners in Practice of Medicine, but retired from that duty on account of the extent of his practice. He might, had he chosen, have had the honour of occupying the Presidential Chair of the College some years ago, but excused himself on account of want of time for such duties. His practice soon after the beginning had become extensive, comprising Trinity and the neighbouring parts of Edinburgh, as well as Leith. It may be truly said of him that he was the medical adviser and friend of the poor as well as of the wealthy, making no distinction. It would have offended him much to have taken notice of it, but many were the poor patients whom he not only attended, but to whom he sent food and medicines, and from not a few of the apparently well-off, when it came to his knowledge that they could not afford it, he declined a fee, or returned it to them. Our informant as to this is his esteemed friend the Rev. Dr Mitchell of South Leith Parish, who has moved for many years among the same community. In his relation to his patients Dr Struthers was a man of few words, gentle but firm, with a nature above all the quackeries. Unreasonable patients had to choose between strict compliance and his not continuing to attend them. His commanding presence and few words added to the confidence that his professional knowledge inspired. Such a combination of professional ability with high personal character accounts readily for the influential position Dr Struthers soon attained in the large community around him. His relation to his professional brethren was no less happy. His professional brethren in Leith trusted and consulted him, and he had the high respect of the profession in Edinburgh. It ought to be mentioned that, though holding that rank, he never hesitated to suggest, in cases of anxiety, consultation with the eminent physicians and surgeons of Edinburgh, it might be with those who had been his fellow-students, or even his juniors. Though having no doubt in his own mind as to the diagnosis and treatment of the case, it was satisfactory to him, and he knew it would satisfy the friends, to have a second opinion, although they had not suggested it.

Though avoiding public life in the usual sense of that term, Dr Struthers took a warm interest in the benevolent institutions of Leith—the Ragged and Industrial School, the Destitute Sick Society, the Association for Improving the Condition of the Poor, and, above all, the Leith Hospital. To the three former he was a liberal contributor as well as honorary medical adviser. To the Leith Hospital he was attached as one of the acting medical officers for a quarter of a century, 1850 to 1876, when he became Consulting Physician, and in 1890 he was appointed President of the Hospital as a mark of his long and valuable services. He took a leading part in the reconstruction and enlargement of the Hospital in 1873. An addition, being in fact a new hospital, was built at that time, and in 1888 the hospital was again enlarged by adding a third storey to the new building. The eight wards that form the new Hospital are well worth a visit from those who are about to build a new hospital or reconstruct the wards of an old one. There is cross ventilation, one bed between every two windows; the walls lined with ornamented slate for about 4½ feet high; the rest of the walls lined with cement, not plaster, and painted with duresco paint, enamelled; bath-rooms and lavatories the same; and the area and cubic capacity of each ward lettered above its door. These arrangements were all made at Dr Struthers' instance. The Hospital, in fact, was his favourite institution, and after he ceased to be acting Medical Officer he was in the habit of dropping in at unexpected hours, early and late, to see that every one was doing their duty. The Hospital now contains altogether 100 beds, and has been rendered available as a Clinical School for women students, a step in favour of which Dr Struthers took a decided and influential part. He had studied the subject of the sanitary construction of houses as well as of hospitals, and was always careful to ascertain whether illness was not attributable to bad drainage or defective plumber work. On many occasions he warned patients not to take attractive-looking villas until the drainage, which he had reason to suspect, was put right, and he repeatedly succeeded in tracing the origin and spread of zymotic disease to foul water supply or some insanitary dairy. He would not consent to a confinement taking place in a house the sanitary condition of which was unsatisfactory, or where there was or had recently been zymotic disease. In such cases he made temporary removal to other quarters a condition of his attending.

It is to be regretted that Dr Struthers did not give to the world the fruits of his large clinical experience. In a letter to us, dated so long ago as 1861, giving his reasons for not removing to Edinburgh, he goes on to say,—" It is all very well for Begbie, Sanders, and Haldane to keep up a constant fire of papers. None of them are general practitioners, and as lecturers they have to keep themselves before the profession and the public. In my case an average day's work is visiting from ten till five, and for an hour, or perhaps two, in the evening, to say nothing of night work. The business of a general practitioner is to keep his curing power at as high a pitch as practicable, and then, as a secondary but non-essential thing, to contribute to the general stock of knowledge, provided he can find leisure. The time that is left at night is not one-half what I would wish for professional study, much less for general reading. I regret nothing more than the fact that an increasing general practice necessitates a serious falling off in reading, and a shelving, more or less, of the scientific department. Their position has some advantages which mine necessarily wants, while mine has some, and I think many, which theirs has not; one cannot have both, and of the two I decidedly prefer my own. One of my schemes on commencing practice was to collect cases regularly for ten years, and after having had ten years' experience to set to and publish, somewhat in the manner of Abercrombie on the Brain. I have the cases, four or five volumes of them, all carefully written out, so that you see I have at least not been idle, although want of leisure and need of rest have prevented my using them up as I intended." His average day's work became heavier than that above stated, and notwithstanding the above depreciatory account of himself, Dr Struthers was a hard student to the end, keeping himself *au courant* with the science of the day. He had mastered all the recent progress in Bacteriology, and was at his microscope on that subject within a few weeks of his death. In the *Edinburgh Monthly Journal* he published papers,—in 1851, "On Hydrophobia;" in 1852, on "Gangrene of the Lung;" and in 1861, on "Acupressure in Amputation of the Thigh." That was, we believe, the first case in which acupressure was used for so large an artery as the femoral.

It may be mentioned that Dr Struthers was an active promoter of the Volunteer movement, and held commissions, from 1859, as Surgeon to the Leith Rifle Volunteer Corps, afterwards as Surgeon-Major to the First Midlothian Rifle Volunteers. His tall, erect figure, at ease in the saddle, was a notable one at the parades of the corps. He was in command for the medical arrangements at the great Volunteer review ten years ago at Edinburgh. He regarded the Volunteer movement not only as a public duty, but as a means of healthy exercise. He early withdrew as much as possible from engaging in the usual enjoyments of social life, finding much of that incompatible with evening study.

Long years of overwork, such as that above indicated, could not fail to tell upon health; and for some years back Dr Struthers had illnesses, for which, on two occasions, he went in spring to the Riviera, residing chiefly at Mentone, but visiting the various health resorts along the Riviera and in Switzerland, so as to be able to advise his patients from personal knowledge. He had been in the habit of taking a month's holiday, usually in the Scotch Highlands, but suffered on several occasions from postponing or losing that for the sake of patients he did not like to leave. In the autumn of 1884 his health was much run down from that cause, and he suffered severely from a gluteal abscess, for which deep incisions were required. He was very ill, and attributed his recovery to the surgical ability and assiduous care of his friend Dr Joseph Bell. In the winter of 1889-90 he had a severe attack of the influenza, after which he went to Mentone and Switzerland. On his return he was very well, and again overworked himself. At Pitlochry, to which he went, though late, for his autumn holiday, he had a seizure, ushered in by a rigor with rise of temperature, an intestinal affection, followed by defective digestion, new to him. This illness, during which he had the care of his old friend Dr Irvine and of Dr Beattie for some three months, reduced him very much. He was practically laid aside by this attack, being able during the past winter only to see patients in his house, and to go out on rare occasions. His case was mainly one of failing strength from defective assimilation of food, the result of long overwork. Everything was done by his medical attendants, Dr Elder, whom he had assumed as a partner, and, in frequent consultation with him, Dr George Balfour, but strength gradually failed, and the end came painlessly and peacefully on the 6th of June.

Dr Struthers' death has been followed by much manifestation of regret. Resolutions expressing warm appreciation of his services and character and deep regret at his loss have been passed at meetings of the authorities of the various benevolent institutions of Leith above mentioned, by the medical staff and by the Directors of the Leith Hospital, and by the College of Physicians of Edinburgh. The funeral took place on June 10th to Warriston Cemetery from South Leith Parish Church, where a short service was conducted by the Rev. Dr Murray Mitchell, in the absence, from illness, of the Rev. Dr Mitchell. The church and the streets were full of mourners showing deep marks of respect for one whom they had so long regarded as more than a friend. Many communications have since reached us; among others, from Professor Gairdner of Glasgow, who knew Dr Struthers from student days, who writes: "The impression he made on me, then and thereafter, was one which has never required to be corrected or modified. He was a man far above the average intellectually, but whose moral distinction was even more striking than his intellectual. With him duty was paramount, and his judgments, both of men and of opinions, were guided by an instinct of justice which rarely allowed him to judge amiss. He was one of the most real men I ever knew."

We have thought it worth while to note in some detail the career of Dr Struthers, not only as a tribute to his memory, but as an example of professional and personal character we would hold up to those who are about to enter the medical profession. His life may be described as one of devotion to duty, and of self-sacrifice, the outcome of an upright and straightforward character, with great natural ability and love of work to go upon, guided by a remarkably sound judgment. That the work of such a man for over forty years should have brought him the universal esteem and affection of the people among whom his life was spent, and what is of still more value, the high respect of his professional brethren in Edinburgh and Leith, need be no surprise.

Dr Struthers was never married. The Crimean war cost him his youngest brother, Dr Alexander Struthers, a young man of much promise, who died at Scutari in 1855 of fever caught in the discharge of his duties. His other brother is Dr John Struthers, formerly Lecturer on Anatomy in Edinburgh, who lately retired from the Professorship of Anatomy in Aberdeen University.

PUBLICATIONS RECEIVED.

A Short Dictionary of Medical Terms. J. & A. Churchill, Lond., 1891.

J. W. Ballantyne, M.D., etc.,—An Introduction to the Diseases of Infancy. Oliver & Boyd, Edin., 1891.

Joseph Bell, M.D., etc.,—Notes on Surgery for Nurses. Oliver & Boyd, Edin., 1891.

J. Mitchell Bruce, M.D.,—Materia Medica and Therapeutics. Cassell & Co., Lond., 1891.

T. L. Brunton, M.D., etc.,—Supplement to a Text-Book of Pharmacology, Therapeutics, and Materia Medica. Macmillan & Co., Lond., 1891.

A. H. Carter, M.D.,—Elements of Practical Medicine. H. K. Lewis, Lond., 1891.

Catechism Series—Anatomy: Part IV.: Abdomen. E. & S. Livingstone, Edin., 1891.

Docteur Élevy,—Biarritz, Bains de Mer et Ville d'Hiver. Baillière et Cie., Paris, 1891.

Guy's Hospital Reports, Vol. 47. J. & A. Churchill, Lond., 1890.

H. A. Hare, M.D., etc.,—Fever: its Pathology and Treatment by Antipyretics. F. A. Davis, Philadelphia, 1891.

P. S. Hutchinson, M.R.C.S.,—Manual of Diseases of the Nose and Throat. H. K. Lewis, Lond., 1891.

Alex. Johnstone, F.G.S.,—Zoology Notes for Students of Medicine and Science. E. & S. Livingstone, Edin., 1891.

T. W. Jones, F.R.S.,—Report on the State of the Blood and the Bloodvessels in Inflammation. Baillière, Tindall, & Cox, Lond., 1891.

Kemp & Co.'s Prescribers' Pharmacopœia. Bombay, 1891.

A. Macalister, M.D., etc.,—The History of the Study of Anatomy in Cambridge. C. J. Clay & Sons, Lond., 1891.

S. Coull MacKenzie, M.D.,—Medico-Legal Experience in Calcutta. E. & S. Livingstone, Edin., 1891.

Murray, William, M.D.,—Illustrations of the Inductive Method in Medicine. H. K. Lewis, Lond., 1891.

Nineteenth Annual Report of the Local Government Board, 1889-90. London, 1890.

Isaac Ott, M.D.,—The Modern Antipyretics. E. D. Vogel, Easton, Pa., U.S., 1891.

J. R. Paterson, B.Sc., F.C.S.,—Synopsis of Practical Chemistry. Edin., 1890.

R. W. Philip, M.D., etc.,—Pulmonary Tuberculosis. Young J. Pentland, Edinburgh, 1891.

Quain's Elements of Anatomy, Vol. 1, Part 2. Longmans, Green, & Co., Lond., 1891.

Rhyming and Mnemonic Key to Materia Medica, by M. D. L. & J. Parnell, Lond., 1891.

Sir Wm. Roberts, M.D.,—Digestion and Diet. Smith, Elder, & Co., Lond., 1891.

M. G. Rolin-Jaequemyns,—Armenia, the Armenians, and the Treaties. John Heywood, Manchester, 1891.

John V. Shoemaker, A.M., M.D.,—Materia Medica and Therapeutics. F. A. Davis, Philadelphia, 1891.

H. Snow, M.D.,—The Proclivity of Women to Cancerous Diseases. J. & A. Churchill, Lond., 1891.

T. S. Sozinskey, M.D., etc.,—Medical Symbolism. F. A. Davis, Philad., 1891.

Louis Starr, M.D.,—Diseases of the Digestive Organs in Infancy and Childhood. Young J. Pentland, Edin., 1891.

G. Steell, M.D.,—The Physical Signs of Cardiac Disease. J. E. Cornish, Manchester, 1891.

B. Thornton, M.R.C.S.,—Comparative Climatology of London and the Chief English Health Resorts. H. K. Lewis, Lond., 1891.

Transactions of the American Association of Obstetricians and Gynecologists, Vol. 3. Philadelphia, 1891.

Transactions of the American Orthopedic Association, Vol. 3. Philadelphia, 1890.

Transactions of the Obstetrical Society of London, Vol. 32. Lond., 1891.

Sir T. Spencer Wells, Bart., F.R.C.S.,—Modern Abdominal Surgery. J. & A. Churchill, Lond., 1891.

Henry W. Wolff,—The Watering Places of the Vosges. Longmans, Green, & Co., Lond., 1891.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Chas. Griffin & Co., Lond., 1891.

Part First.

ORIGINAL COMMUNICATIONS.

I.—A FEW NOTES ON THE USE OF KOCH'S TUBERCULIN.

By George W. Balfour, M.D., LL.D., Physician to Chalmers's Hospital.

Having, through the kindness of Dr von Wegner of Berlin, procured an early supply of Koch's tuberculin, I have during the past few months used it in several cases with a very considerable amount of success, and without detriment to any. As everything concerning the use of tuberculin, which is claimed to be a remedy for some of the direst diseases that afflict mankind, must be of the greatest interest to the profession, I shall make at present a short preliminary statement as to the class of cases treated and the results obtained, in the hope that this may encourage others to persevere in what is still very much a pathological experiment, but an experiment of a very remarkable character, and which seems to me full of hope for the future.

The tuberculin dilutions were made with ½ per cent. solution of pure carbolic acid in boiling distilled water (44 grs. to one pint) allowed to cool; the fluid was injected with a Koch's syringe, because by it the dilutions are readily prepared, and the syringe itself is easily sterilized.

Lupus.—The first case of lupus in which I used tuberculin had been under a variety of treatment for long, and three years ago had been thoroughly scraped. A copious apple-jelly deposit was spread over both cheeks and the nose, the *alæ nasi* and *septum* were ulcerated. The 1 per cent. dilution of tuberculin was used, and of that 1-10th of a cubic centimetre, that is, 0·001 c.c., or 1 milligramme of pure tuberculin was employed for the first injection, and was followed by a moderate reaction. The treatment occupied from February 9th to May 10th, the injections being repeated at first every two or three days, and latterly at varying intervals, sometimes only once a week. The strength of the injection was gradually increased by 1 milligramme at a time up to as much as 1 centigramme of pure tuberculin. It was not thought necessary or advisable to go beyond 1 centigramme, but the patient had, at intervals of about a week, five injections of 1 centigramme each before she was discharged on the 10th of May.

During the treatment the temperature—usually normal or subnormal—only once showed any very decided febrile reaction, rising to 103°·2 on the fifth injection; for this she got 10 grains of antipyrin, which in three hours brought down the temperature to 100°. As a rule the temperature during the period of febrile reaction did not rise much above 100°, seldom so high as 101°. At first the febrile reaction did not closely follow the injection, or if it did, the temperature rose slowly for a couple of days, and sometimes after a primary rise and subsequent fall the temperature rose a second time quite as high as at first without any repetition of the injection. During the last few weeks of treatment the rise of temperature more immediately followed the injection, and the fall was completed within twelve hours of the acme. During the treatment the patient was well fed and well cared for in every way, and had also 1 drachm of the syrup of the iodide of iron twice a day. She weighed 6 stones 13 lbs. when admitted, and 7 stones 4 lbs. when she left. The *septum* and *alæ nasi* were long healed; the interior of the nose, unaffected by former treatment, was now quite healthy; and a cough, which usually recurred every spring, had not troubled her this year. All the apple-jelly deposit seemed removed and the skin healthy, except a small spot on the tip of the nose about the size of a split-pea, which was slightly red; believing that this might die away, she was allowed to go, with orders to return in a month or six weeks to report. On the 3rd of July she returned; the spot on the nose had not faded, and there was a little redness on the left cheek,—obviously the disease had not been perfectly removed. Nevertheless she says that since the disease first appeared it has never, under any previous treatment, been so thoroughly healed as it is now. A few more injections will, I trust, remove all appearance of the disease, though, of course, time alone can prove whether the cure is to be permanent or not.

The second case of *lupus* treated by tuberculin was that of an elderly female who had not previously been under any treatment. In her case the disease affected the cheeks and nose precisely as in the former patient, but it was more superficial and erythematous in character, and there was no ulceration. The most remarkable point in the history of this patient was that an injection of 0·001 c.c.—that is, of only 1 milligramme of pure tuberculin—sent her temperature, in less than three hours, up to 105°; 10 grains of antipyrin were promptly given, the temperature rose no higher, and fell gradually. The local reaction was well marked. This patient subsequently received several injections of 1-10th of a milligramme, 0·0001 c.c. of tuberculin, with always marked but moderate febrile reaction, but with very distinct local action. The remedial action was equally decided, the redness gradually faded; she expressed herself as thoroughly satisfied with the results, and went home much too soon.

The third case of *lupus* is also an elderly female; the disease is of eight years' standing; it has been repeatedly scraped and cauterized, and apparently improved, but it has always recurred. When admitted on June 17, the soft apple-jelly infiltration was found to affect both cheeks and the nose,—the point of the nose, including both *alæ* and the *septum*, presenting a raw, bleeding, ulcerated surface. The injection of 1-10th of a milligramme of tuberculin produced marked local reaction, with drying up and crusting of the ulceration, but without any rise of temperature. Marked local reaction without fever continued to follow each injection until the fifth, when 5-10ths of a milligramme produced violent local reaction and a rise of temperature up to 103°. The febrile reaction was at once checked by 10 grains of antipyrin, and the erythematous blush which suffused the whole face gradually faded away, leaving behind a marked improvement in the diseased patch. This improvement has continued to increase with each injection, the ulcerated surface being now nearly healed, and the apple-jelly infiltration contracting both in extent and apparent depth. She is still under treatment.

Phthisis.—The first phthisical patient who came under the tuberculin treatment was sent into Hospital by the late Dr Struthers of Leith, on the 8th of January 1891, on account of breathlessness on exertion, feeling of exhaustion, loss of weight, and a temperature ranging from 99° to 100°·3. She had a good deal of cough, with some muco-purulent expectoration, but no bacilli. There was slight dulness over both apices, but chiefly over the right, and some fine crepitation over the left apex posteriorly. No febrile reaction followed the first three injections of 1,2,and 3 milligrammes respectively; but after the fourth injection of 4 milligrammes of tuberculin the patient complained of giddiness, headache, and faintness. During the first six hours subsequent to the injection her temperature fell to 97°·6, and then rose gradually during the next six hours to 101°. Under the influence of tuberculin her temperature steadied, becoming subnormal, rising with each injection, but never over 100°·5, and seldom up to the 100°. The dulness and fine crepitation over the left apex melted entirely away. Fine subcrepitant rattles became audible over the right apex after two or three injections about the middle of the treatment, but they also faded entirely away and ceased to recur, so that on her discharge nothing could be detected but a slight dulness over the right apex. Her cough and sputum were entirely gone, but she had lost 7 lbs. in weight. On admission she weighed 9 stones, at her discharge only 8½ stones; her height was 5 feet 8 inches. She has since gained in both weight and strength, and is now in perfect health and fit for the discharge of all her duties.

The second phthisical patient was a girl of 18 years of age, sent to the pay wards of the Hospital by Dr Lucas of Dalkeith, for the purpose of being treated by tuberculin. She was admitted on

January 8th, 1891; her height was 5 feet 3½ inches, her weight 7 stones 3½ lbs., and her temperature ranged from 97°·8 to 101°·2. She was somewhat emaciated. Her left lung was more or less condensed throughout and riddled with anfractuous cavities, especially in its upper lobe. The upper lobe of the right lung was also slightly dull, and sub-crepitant rattles were heard over it. Altogether she was so unpromising a case that it was only at her own earnest entreaty that I consented to use the tuberculin. After the first injection of 1 milligramme of tuberculin the febrile reaction was not marked, the temperature not rising over 101°·4; but the second injection of 2 milligrammes was followed by a rapid rise of temperature to 104°, immediately checked by 10 grains of antipyrin. After this the reaction became less and the temperature steadier, though occasionally the day after the injection there was a rise of temperature to 101°, quite equal to that of the immediate reaction. She remained under treatment till the end of February, when she was discharged at her own request, weighing 6 stones 13 lbs., having lost 5 lbs. during treatment. After her discharge the tuberculin injections were continued by Dr Lucas, to the amount of 5 centigrammes once or twice a week. On the 26th of March Dr Lucas wrote me:—"Miss P. is now nine pounds heavier than when she returned, having gained at the rate of three pounds a week. Her temperature yesterday after injection went up to 103°·8, and on each occasion there has been marked febrile reaction. Her general health seems good; she is up all day, cheerful, and with a good appetite. She goes out when the weather is suitable. Her cough is still a little troublesome, but the sputa do not increase. There cannot be a doubt but that the Koch is acting as a very effectual drag on the disease." And on June 8th Dr Lucas wrote me:—"I still inject Miss P. twice a week with 8 centigrammes as usual. There is now no reaction whatever. There is dry friction sound over the left apex, and a similar sound over the right apex, but not so pronounced. There is a cracked-pot sound over the left apex. She does not seem to have gained weight lately, but has not been weighed. On the whole she is in a fair state of health, and able to be about every day."

The third case was that of a poor girl of 19, brought from the country, with both lungs riddled with cavities, much emaciated, with a temperature rising daily to 102°, and albuminuria from waxy kidneys. Obviously this was no case for hopeful treatment; but as she could not be at once sent home, I determined to try the effect of tuberculin. The result was surprising. Under the influence of injections of 1 milligramme of tuberculin her cough and expectoration diminished, her temperature steadied and was lowered; she actually got stronger, and gained a pound or two of flesh. Advantage was taken of this temporary improvement to send her home, where she died two months subsequently.

The fourth case was a woman aged 31, a cook with a family in town, who had been coughing all winter and losing flesh, but doing her work well without a complaint up to the moment of admission. Her sputum was copious and full of bacilli. On admission on May 8th she weighed only 7 stones. The apex of the left lung was dull and full of coarse crepitations; the base of the left lung was dull and full of gurgling rattles; intermediately the breath sounds were rough vesicular inspiration with prolonged rough expiration. The base of the right lung was dull, the inspiration faint vesicular, with prolonged expiration. A few injections of 1 milligramme each were followed by slight diminution of the expectoration, a considerable diminution of the cavernous gurgling at the base, and complete disappearance of the apex crepitation. But the cough continued to be troublesome, though not accompanied by so much expectoration, and the wasting continued. There was never any marked febrile reaction, but the remedy produced its other effects, and the local disease seemed to improve, so far as one could judge from the physical signs. But the general condition did not improve.. With a clean tongue and no gastric symptoms she lost all relish for food, and in spite of all endeavours to feed her, and the free use of stimulants, she continued to lose strength and weight. Her temperature never steadied, but continued to oscillate between 97° and 102°. The tuberculin injections were only repeated a few times, and never exceeded 3 milligrammes. As no improvement resulted, and as the general condition was more serious even than the local, the injections were stopped for a month. At the end of the month, as no improvement had taken place, tuberculin was again tried, but without any effect. She is now hectic, and her temperature oscillates daily between 99° and 102°·5.

The fifth case was a male, aged 21, admitted November 24th, 1890, suffering from cough, with considerable muco-purulent expectoration full of bacilli. His height was 5 feet 10 inches, and his weight 10 stones 10 lbs., rather more than 2 stones less than his normal weight. There was marked dulness in front as low down as the third rib. The dulness behind was less marked. Over the dull patch in front there were many sub-crepitant rattles, with rough inspiration and prolonged expiration. Over the dull patch behind the rattles were faintly audible, the respiration as in front. The percussion and respiration over the rest of the left lung and over the whole of the right lung were normal. The temperature was irregular, varying from 98° to 101°.

Under ordinary treatment—small blisters repeatedly applied below the left clavicle, sedatives for his cough, various inhalations, cod-liver oil emulsion with hypophosphites, and plenty of good nourishing food—he at first gained a little weight, up to 11 stones 4 lbs., and the local conditions seemed somewhat improved. Towards the end of December, however, he fell off in weight. The dulness over the left apex became more marked, and its area slightly increased, while instead of coarse crepitations as at first, loud gurgling rattles were audible; the sputa were increased in quantity and crammed with bacilli.

On the 3rd of January 1891 he weighed 11 stones, and seemed to be taking the usual downward course of such cases. He then received an injection of 1 milligramme of tuberculin. This produced the usual general symptoms, but was followed by no febrile reaction whatever. Indeed, the injections were not followed by any rise of temperature until the seventh injection of 6 milligrammes of tuberculin. Within three hours after this the temperature went up to 104°. Ten grains of antipyrin sent the temperature down to 102° in three hours, but it rose during the next three hours to 103°·6, and in six hours to 103°·9; after this it fell steadily till, in eighteen hours, it was only 98°·6. Four days after this another injection of 6 milligrammes sent his temperature up to 104°·8 in six hours. Ten grains of antipyrin brought it steadily down to 99°·6 in nine hours, but the next day the temperature went up to 101°·2 without further injection; after this it fell gradually to 97°. A third injection of 6 milligrammes three days subsequently only raised the temperature to 99°·4. The temperature after this kept steadier, and though the injections were increased by 1 milligramme each time, there was no marked reaction till the amount reached 1 centigramme, when the temperature rose to 102°·6. His weight was now, February 1st, found to be 10 stones 10 lbs., so that his recurrent febrile attacks had lost him 4 lbs. After this date his temperature became much lower and steadier, ranging between 97° and 99°, and the febrile reaction gradually became less, till an injection of 10 centigrammes was reached, when it ceased. His weight at this date, February 28th, was 11 stones 3 lbs.; his cough was very slight; his expectoration just a little mucus; the bacilli had disappeared, only a few micrococci being to be found. There were still some crepitations audible over the dull patch at the left apex. Between the 28th of February and the 6th of April he had seven injections of 10 centigrammes each, at irregular intervals. Upon one of these occasions only, on March 25th, there was a rise of temperature amounting to 2°. On all the other occasions there was no febrile reaction whatever. The injections of tuberculin were now stopped, his weight was 11 stones 13 lbs., and the only remaining trace of illness was the persistence of a few fine crepitations over the dull patch in the left apex. To dry up these little crackles he had occasional hypodermic injections of 1-100th gr. of atropin. Just at this time this patient was most unaccountably struck down by a pneumonic attack affecting the lower lobe of his left lung. From this, however, he recovered perfectly, without any increase of the affection of the left apex, where the dulness still remained, with some fine crepitation. He again got a few atropin injections with apparent benefit, and he rapidly regained the weight he had lost during his pneumonic attack. His temperature was perfectly steady, the daily range being from 97° to 98°·4. An occasional bacillus could now and then be found in his sputum, but practically he was cured, and was therefore discharged on the 20th of June, in the hope that the trifling apical catarrh would speedily dry up under the tonic influence of change of air.

A fortnight subsequently he returned to report himself. He had gained 4 lbs.; he looked healthy; his cough was only occasional; his expectoration a little mucus in the morning. The apical dulness still persisted, but the few fine crepitations still present were so faint as to be scarcely audible, and did not occupy nearly so large an area as formerly. He is to return again in a month.

Elephantiasis.—An elderly female, with elephantiasis affecting both legs, but chiefly the left, which was largely occupied by a fungating ulceration, and with a scrofulous-looking sore on one cheek, but without bacilli in any of the discharges, was treated by compressing the legs with solid rubber bandages, and by injections of tuberculin. Well-marked febrile reaction followed each injection, the temperature often rising to 103°, and being seldom below 102°. The sore on the cheek healed; the ulceration of the legs steadily improved, and seemed to be healing nicely, while the legs themselves were much diminished in size. The patient always suffered much from the constitutional disturbance caused by the tuberculin; and when the amount injected got over 1 centigramme, she commenced to have regular febrile exacerbations every second or third day. These feverish attacks occurred on days when tuberculin was not injected, and continued to recur when these injections were entirely stopped. After a couple of weeks the patient went home to have the benefit of change of air, and I have not heard of her since.

These few imperfectly recorded cases, like all those hitherto reported, most unmistakably teach us that in Koch's tuberculin we have got hold of an agent of exceptional energy. They also teach us that this energy is capable of acting remedially in diseases which have hitherto proved the *opprobria medicorum.* We do not yet know whether the improvement thus gained is to be permanent, or is only temporary, this time alone can teach us. Meanwhile the melioration obtained is remarkable enough to excite to the most anxious endeavour to learn how wisely to direct the energy of so powerful an agent. The only available method of obtaining this knowledge is careful experiment, and we are the more encouraged to persevere therein that the success of tuberculin would inaugurate a new era in Medicine, and open up a vista of undreamt of possibilities in the treatment of disease.

II.—THE NEUROSES OF DEVELOPMENT:

BEING THE MORISON LECTURES FOR 1890.

By T. S. CLOUSTON, M.D., F.R.C.P.E., Physician-Superintendent, Royal Edinburgh Asylum for the Insane; Lecturer on Mental Diseases, Edinburgh University.

(*Concluded from page* 27.)

LECTURE III.—*continued.*

Adolescent Insanity and its Secondary Dementia.

THE mental functions of the brain are liable to many kinds and to various degrees of disturbance and defect during its periods of growth and development. As we have seen, it can, from hereditary and traumatic causes, and from variously-caused arrested development, be left in the condition of idiocy or imbecility. I have already endeavoured to sketch the various motor and sensory neuroses in which psychical symptoms may occur. The lesser mental diseases of development are delirium at low temperatures, *pavor nocturnus*, and somnambulism, of which I have already treated, and the short attacks of mania and melancholia that occur very rarely indeed in a few children of the most neurotic type. Besides these, there is the really grave and most important, as well as very frequent, mental disease, which in 1873 I first described and named the *Hereditary Insanity of Adolescence*, but which I now call simply *Adolescent Insanity*. The statistics and clinical facts I have published in regard to this form of mental disease[1] are sufficient to prove its existence and its importance, and Dr Bevan Lewis has confirmed and strengthened my conclusions by the statistics of his Asylum and his own independent investigations.[2]

In the upward course of evolution the mental part of man's brain has been the highest point hitherto reached. It has been the goal towards which all else has apparently tended. It is the superstructure without which all the other results of evolution would have had no meaning. Though it has probably taken hundreds of thousands of years of the evolutionary process to attain this high result, yet we must never forget that it only takes about five and twenty years and nine months to develop this organic miracle in an individual from the sperm cell and the germ cell up to the grandeur of function, the immeasurable complexity and the inexhaustible capacity that is possessed by the brain of a man of genius. Instead of one brain cortex in a thousand going wrong in this developmental process, or failing to reach a fair working capacity of function, the wonder is that in almost any case it ever attains this. It is receptive and reactive to impressions from almost every substance, every energy, and every influence in Nature outside it, as well as to much of its own energizing —in some cases most acutely reactive. It must provide for its own nutrition and repair. It must be stable, and yet not too stable, in its molecular condition, and in its energy production, for a too stable nerve-cell would not be properly reactive. It may be that the secondary dementia of adolescence that I am to describe —that state of mental death while the body lives on—is in its essence a mental cortex too morbidly "stable," and, therefore, unproductive of mental energy, being irresponsive to appropriate stimuli. Certainly some chronic dements can be roused by extraordinary stimuli. The brain holds within itself its own vasomotor centres, and probably has an enormous number of such centres, each regulating a small but distinct area, with higher centres regulating combined and functionally associated areas. Even the change from a slightly acid to a slightly alkaline reaction round its cells would, after first unduly stimulating, soon destroy all higher brain and mental action in the cortex.[1] The laboratories that regulate the production of its appropriate chemical fluids, on which so much depends, must be kept in working order. The latest researches into its histology[2] show that each individual cell has its own apparatus of capillary vessel for nutrient supply, and lymphatic space and cell for drainage, on the healthy working of each of which the normal cell action must depend. All who have studied the pathology of insanity know that in juxtaposition we often find a diseased or degenerated and a normal cell. This necessarily implies that each cell has a certain individual trophic independence; and there are millions of such cells! No human imagination can conceive the complication of this cerebral mechanism, any more than the keenest thinkers as yet have been able to imagine anything of possible connexion or "thinkable" co-relation between this mechanism and the states of consciousness which are its end.

---

[1] *Edinburgh Medical Journal*, July 1879–July 1886. *Clinical Lectures on Mental Diseases*, 2nd edition, p. 531.

[2] *Text-Book of Mental Diseases.*

Looking to the gradual development of mind up to puberty, and the enormous and rather sudden leap that is then taken towards the higher mental life of the adult, we must assume an almost completed apparatus lying ready to be brought into use, just as the centres of respiration are ready for their functions at birth. And considering that the very highest mental and moral qualities of all, with the subtle differentiation between the male and female mental types, are only fully seen between eighteen and twenty-five in the average human being, we must look still to the apparatus through which all this is brought about in the brain cortex. In its organization and qualities alone is to be found the explanation of why in the male sex the mental development at that age is in the direction of action, of cognition, of duty, and of the higher imagination, while in the female sex it takes the direction of emotion, of protective instinct, of a craving for admiration and worship, and of the creation of an ideal "hero" to be loved and worshipped in return. It is no wonder if these highest functions are the last to be developed in the organism, that derangements and diseases affecting the higher mental functions and their cerebral apparatus come last of all in the order of the developmental neuroses. They are incomparably the most important, too. In degree they present the greatest variety, from slight mental and moral distortions, mere "peculiarities," "eccentricities," and "idiosyncrasies," up to the complete temporary mental dissolution of delirious adolescent mania, and the permanent mental death of its secondary and terminal dementia.

---

[1] Roy and Sherrington, *Journal of Physiology*, 1890.

[2] Bevan Lewis, *Text-Book of Mental Diseases*.

A very few words are all that is necessary for my present purpose about the mania and melancholia of children before puberty. I have never met with any such case that has not been the child of very neurotic or insane parents or grandparents, and whose own diathesis was not intensely neurotic. The attacks are short and apt to be relapsing, and in most of those which I have seen I had some reason for thinking that some signs of abnormally early reproductive period accompanied the mental symptoms. The earliest case I ever saw was a small melancholic child of six, who wept and wailed, and was sad about imaginary things, such as going to hell, and having taken a drink of water when it was wrong to do so. I have known two cases of a suicidal melancholia from seven to ten years of age. Child-mania is usually acute or even delirious in character, and seldom lasts more than a day or two at a time, except where there are convulsions or organic disease. Such brains are constituted in an intensely unstable way. They mean that a pathologically premature development of the emotional brain centres has taken place, the energizing that results therefrom in feeling being without the proper organic stability in the cortical cells that so energize. I never met with such a case without there being various other developmental neuroses in brothers or sisters.

The statistics of the Royal Edinburgh Asylum show the following facts in regard to the incidence of insanity during the age of adolescence:—Of 1796 total cases admitted in the course of five years, 320, or 18 per cent., were between fourteen and twenty-five years of age. Of this number the disease was either congenital or due to very special exciting causes in 90, leaving 230, or 13 per cent. of the whole, in whom the influence of development was the chief predisposing cause of the disease. The first two years, the 14th and 15th, which are essentially those of puberty, only produced two of the 230 cases. This at once sets aside the first onset of reproduction as being a most insignificant factor in the production of mental disease. This contrasts markedly with epilepsy, as we have seen. The next five years, the 16th, 17th, 18th, 19th, and 20th, only produced 16 cases each, showing that their psychopathic tendency was low. But the next five years of adolescence, from the 21st to the 25th inclusive, showed a very marked increase, for they produced 31 in each year, or 68 per cent. of the whole. In fact, those five years produced more *uncomplicated* cases of insanity than any other five years of life. Dr Bevan Lewis does not give the exact numbers that occurred each year of life, but he found three-fourths of all his adolescent cases to occur between eighteen and twenty-one years of age.

If these are the facts in regard to the occurrence of insanity, what is its relationship to the normal mental developments of the brain at that period? How does it stand in regard to hereditary neurotic taint? What are its neurotic affinities? What special forms does it assume? How does it usually end?

There cannot be the least doubt, I think, as to its relationship to the special mental characteristics of the period of life in which it occurs. It is the period of intense mental development in the female sex, tinctured at every point by her reproductive instincts, which are then acquiring solid form and physical potentiality. With reproduction comes, like a flood, the real knowledge and realization of all the possibilities and all the mysteries of life. In the male sex all the combined ambitions and altruistic emotions of life then burst forth to consciousness. Up till then in both sexes sufficient had been the day for its pleasures and for its evils. A mild egoism had bounded the desires. No real intensity in life had appeared to carry everything before it. The philosophic meaning of the change is that the race is greater than the individual. We know that all this new mental life, all those intense emotions, all those overmastering ambitions, all those vague but profound longings, are represented, nay, that they arise out of brain energizing. Not only do they do so, but also the ideal and the poetic faculties of the period, and the very moral and volitional life are dependent on brain working as much as the movements of the fingers. The undeveloped brain shows no overmastering intensities of feeling or volition, and has no impregnable moral resistances. When development proceeds normally, every feeling and every mental capacity are expressed in a physical characteristic of expression of form or of motion. The beauty of woman and the strength and manliness of man are the bodily equivalents and counterparts of the mental ideals proper to the sexes.

As it is during this period, from twenty to twenty-five, that the mental "character" and the bodily "constitution" are fully formed and settled, it is no wonder that there are risks to the mental functions of the brain to which hereditary weaknesses have been transmitted. If those weaknesses are mental, the result is apt to be adolescent insanity, or one of that most varied group of mental and moral twists or lacks which may be described as adolescent torpor and stupidity and aimlessness; or adolescent perversion of the moral sense or power of control exhibited in incompatibility of temper, irritability, impulsiveness, dipsomania, immodesty, vice, shamelessness; or general lack of morality; or in changed emotion, such as utter selfishness, aversion to relatives, asocialness, and unnatural attachments. The bodily equivalents of such mental misdevelopments are menstrual irregularities, chlorosis, hysteria, neuralgia, unattractiveness of person, irregular or deficient growth of mammæ or beard, awkward body movements and bad "expressions" of face.

The special symptoms of adolescent insanity are that it is maniacal rather than melancholic, 78 per cent. of all the cases taking the form of mania, with a considerable number of cases of stupor—melancholia not being absent, however. It is unquestionably adolescence which determines the fact that the ages at which most cases of mania occur are from twenty to twenty-five, while for melancholia they are from thirty-five to forty, and for general paralysis from forty to forty-five. The mania is in the male sex restless,[1] boisterous, full of mock-heroic pseudo-manliness, obtrusive pugnaciousness, with often a morbid sentimentality; while in the female sex we find also restlessness, with lack of self-control, intolerance of control by others, impulsiveness, hysterical obtrusiveness, and emotional perversion. In both sexes we naturally find strong and perverted sexual ideas and practices. In adolescent insanity periodicity and remission prevail to a larger extent than in any other form except *folie circulaire*, which often originates then. This periodicity is an accurate pathological reflection of the normal periodicity of all nervous energizing, and especially of the reproductive capacity and *nisus*. This form of insanity has the closest relation to the function of reproduction.

It is the most hereditary of all insanities. Taking all our cases we only get a hereditary history of insanity in ancestry or collaterally in 23 per cent., though this is far below the real facts if we could get them. In adolescent insanity we got a hereditary history of insanity in 65 per cent. of the cases. If I confined my attention to only these cases in which I had a really sufficient opportunity of ascertaining the hereditary history, I have found either insanity, or some nervous disease, or a distinct nervous constitution in both parents in almost every case. It is especially allied to and mixed up with epilepsy, chorea, deaf-dumbness, and idiocy.

Looking to its ending, we find that there are two opposite conditions in which by far the most of the cases terminate. These are recovery, mental life, and capacity in from 50 to 60 per cent. of the cases; and secondary dementia, mental and civil death, in about 30 per cent. The gulf between these two terminations is that between life and death. I believe that the majority of the cases who do not recover and become demented were doomed to this ending from the first by their original hereditary defect, just as much as the evolution of idiocy was inevitable in most cases of that defect from the time the sperm cell met the germ cell *in utero*, on account of the hereditary defect in one or both cells. Yet up to eighteen the young man or woman who is to die a secondary dement has often been sane and strong, with no bodily or mental defect that we can certainly detect. This I believe to be owing to our present want of knowledge of development and its minute characteristics. I shall presently point out some of the morphological and other signs that often uncertainly presage adolescent insanity in some cases.

---

[1] *Clinical Lectures on Mental Diseases*, by the Author, 2nd ed., p. 205.

The secondary dementia that results in 30 per cent. of adolescent cases is of all acquired dementias by far the most complete. It is a pure degradation in function of the mind tissue, without in some cases many motor, or sensory, or trophic nervous accompaniments. Many of the patients will live in health, under favourable conditions, long lives. The change that takes place in the mind cortex in this developmental dementia is unique in organic nature. No other tissue undergoes a change in function like it, without showing manifest signs of alteration of structure, discoverable by naked eye or microscopic examination. The difference in functional quality between the cortical cell before the dementia and after it is the difference between effective human mind and mind often far below that of a dog. Yet we cannot as yet in early dementia by microscopic examination see any difference between the two cells. That more than anything else shows us how far we are yet from being able to examine a brain cell thoroughly. Of late years Dr Bevan Lewis has devised a method of cutting sections of brain, by which we can detect differences in old-standing cases of dementia.[1] A typical secondary dement after an attack of adolescent insanity does not think, does not feel, does not will, does not imagine, and does not remember in any proper sense. "Place fifty of them in a rich country, and they will neither sow nor reap, and will die off at once. If any other single organ in the body were in the same state as regards its function in which the mind organ in the brain is as regards its function in dementia, the body would die."[2]

There is, to my mind, a striking analogy between idiocy and dementia. With certain points of difference the great mental deficiencies are the same. The idiot has usually far more bodily defects, but that was because in idiocy the bad heredity was stronger and earlier shown during the formation and growth stages of life. I have already related cases where from traumatism, fevers, hydrocephalus, loss of the senses, or hereditary syphilis, children of from seven to twelve were arrested in their brain and mental development—put back, as it were, and left in states that could not be distinguished from congenital imbecility. There are a few cases of secondary dementia, resulting from attacks of adolescent mania, usually in the early years of adolescence, that become so complete as to resemble idiocy. Looking at the whole question of mental enfeeblement from birth up to twenty-five from the point of view of brain development, I am inclined to the conclusion that the secondary dementia of adolescent insanity is pathologically allied to genetous idiocy, as it certainly is etiologically through heredity. Much secondary dementia I look on as postponed idiocy. There are links that connect the one form of mental enfeeblement with the other that may occur in every year of life, from birth up to adolescence. Every form of enfeeblement, congenital or adolescent, may have maniacal attacks superadded to it. We have seen how the percentage of deformed palates is nearly the same in idiocy and adolescent insanity, this frequently indicating, where it exists, a certain bad quality and non-development of brain.

---

[1] *Text-Book of Mental Diseases.* Bevan Lewis.

[2] "Secondary Dementia," by the Author, *Journal of Mental Science*, October 1888.

To my mind the change in the brain cortex, through which cells that had, when normal, been the vehicle of high thought, keen emotion, vivid imagination, accurate memory, and powerful volition, become, when pathological, unfit to manifest any one of these qualities, without any perceptible microscopic change, is the most remarkable and mysterious change in Nature next to that from life to death, and of itself marks out adolescent mania as the greatest and most important of all the developmental neuroses.

Adolescent insanity has also this peculiarity, it occurs just before maturity. It is the last cortical developmental disease. Just when the organism is about to take on itself the burden of full reproductive capacity in addition to that of organic and mental life, it breaks down at the very highest point. Nature's law of the barrenness of a bad stock is thereby carried out, for dements, though not necessarily asexual or barren, are in any organised society non-reproductive.

Recovery from adolescent insanity is usually marked by the development of full reproductive characteristics. The beard grows, the voice changes, the form assumes the full masculine type in the man, while the breasts develop, the form rounds off, and menstruation becomes normal in the female.

The following is an example of the insanity of puberty who made a good recovery :—

R. B., æt. 17½. Third attack. Maternal aunt and paternal second cousin were insane. Was a healthy, clever girl till she was fifteen, when at the onset of the first menstrual period she got dull and depressed. Next month, instead of menstruating she became very dull and melancholy, and was sent to the country. At the third month she became quite stuporose and was sent here. She was a typical example of melancholic stupor. By the aid of fattening food, "building up" medicine, and hospital treatment, she recovered in three months. In another three months she became acutely maniacal, and was sent here again. From being a quiet girl she became a great tom-boy. She jumped on and off tram cars without paying; she ruled her younger brothers and sisters with a rod of iron; she was "cheeky" to her elders; she obeyed no one. She was always in great spirits. In four months she was fit to go home. It was noted that she became excited every month, though she did not menstruate. She was very precocious; was a great flirt in the ball-room, and as vain as a peacock. Eight months after, at the end of last year, she again had a very acute attack, and was admitted. For three months she was in a great hilarious excitement, then for another three in a state of profound stupor. Then she slowly recovered, till she has now reached a normal condition; is stout and womanly looking, instead of being girlish as when she became ill. She has now menstruated three times, after an interval of two years since the first time. She is stouter, and is more womanly than she has ever been. The close connexion between her uterine functions and her mental condition was noticed by all during the last two years.

The following is an example of the more common form of adolescent insanity occurring during the latter five years of the period:—M. A. G., aged twenty on admission; a steady, cheerful, industrious girl who had exhibited no marked mental peculiarity until her present illness. An aunt had chorea, and her father was markedly neurotic, though not insane. She had been overworked in an indoor occupation and became anæmic, then she suffered from bad headaches, then from insomnia, then showed "hysterical" symptoms, then exhibited slight melancholia of a religious type, and finally became maniacal. This train of symptoms took about three months to reach that stage of mania at which she had to be placed in the Asylum. When admitted she was erotic, restless, had exalted ideas, *e.g.*, that she was the Princess of Wales. She gradually got worse, and was so acutely maniacal that for several days she had to be secluded in the padded room. The excitement abated in about a month, and then she had a relapse not quite so severe as the first attack. This occurred three times. Between each attack she picked up and gained in weight, so that when the relapse occurred she was heavier than on admission.

Finally, she got rid of the tendency to become excited, grew fat, gaining nearly two stone in weight. She settled down into a sedate, modest, sensible girl. She began to menstruate regularly about five months after admission. At first there had been dysmenorrhœa and then amenorrhœa for three months. She is now perfectly well, and I see no reason, from my experience of similar cases, why she should not so remain all her life. During the attack of insanity she manifestly developed from an immature girl into a woman in looks and shape. The attack marked a physiological crisis in her bodily and mental development, and having got over that, she passed into normal womanhood.

The next three cases were members of the same family, J. P. and M. P. being brothers, and M. P. A. being a sister. Their mother had been repeatedly insane, and in the Asylum four times, suffering from attacks both of mania and of melancholia, from which she made good recoveries. Two of the attacks were puerperal. She suffered from bad neuralgia, too, at times. Her mother had a cousin an imbecile, and she—*i.e.*, the patients' maternal grandmother—died of consumption. The patients' father was a drunkard, had a squint, had suffered severely from cephalalgia at adolescence, and died of cerebral apoplexy. The father and mother were sixth cousins. The following is briefly the history of the children :—Eldest : a son, a drunkard ; a thief, sent to prison ; left handed ; talked much in his sleep. Second : a daughter, normal. Third : a daughter, had epileptic fits as a child ; did not get proper control of her bladder till she was twelve or fourteen ; had two illegitimate children, and "thought nothing more of this than of having her tea." Fourth and fifth : girls, died of convulsions at six and five months respectively. Sixth : M. P. A., a girl who never was honest and truthful, but pleasant mannered ; got married at twenty, and took to drink when pregnant—becoming a dipsomaniac with slight morbid elevation, so that she was sent to the Asylum on three occasions. Seventh came J. P., who became insane and maniacal at nineteen, recovered in a few months, then had another similar attack at twenty-two, and after various relapses passed into complete terminal dementia at twenty-four, just when his beard grew fully, and he lives on, healthy in body, but devoid of all the higher mental attributes. The eighth was a girl, who is as yet a pleasant looking healthy young woman now twenty-four. Lastly came M. P., a boy who became insane and melancholic at 11½ ; recovered after a few months ; then had another attack, and was maniacal a year ; and then another, again one of mania, when he was sixteen, which has passed into complete secondary dementia.

It is curious to notice here that the eldest boy and the two girls who suffered from neuroses were epileptic or lacking in mental control like the father, and the two youngest boys were insane, but in them the disease was developmental, and became dementia in adolescence, their graver psychoses being derived from the mother. The convulsions in the cases in which they occurred appeared during early childhood: the insanity was also developmental, but appeared later. The neuroses became accentuated and deeper in character in the youngest children born after the mother had been insane, as well as appearing earlier in life, until in the youngest Nature seemed only to have had normal developmental energy enough to carry him sound-brained up to eleven years of age.

I had a case of two neurotic, but otherwise healthy parents, whose two eldest children had hip-joint disease at seventeen and recovered, but one of them afterwards died at twenty-five of phthisis; and the youngest son, after being an adolescent dipsomaniac and "fool" generally as to his morals, but clever intellectually, took an attack of mania at twenty-two, which ended in mild secondary dementia—the two children between the two eldest and youngest being healthy. All the children but one were highly neurotic and slightly peculiar mentally—that one attaining marked distinction in his profession.

I have had in the Asylum something like twelve members of one family—brothers and sisters or cousins—epileptics, melancholics, cases of mania, imbeciles, and idiots: many of them having been phthisical. I have had members of four generations of that family, and in four-fifths of them those various neuroses appeared first during adolescence, especially in the younger generations.

In some cases we find neuroses of other kinds arising during early development, and ending in insanity at a later period of life; in some such cases full bodily and mental development being postponed, or never being reached at all.

The following case illustrates the connexion of acute rheumatism, asthma, chorea, over-sensitiveness, and over-shyness of disposition, amenorrhœa, hysteria, melancholia, stupor, and secondary dementia:—

A. B.—Heredity: father and his two brothers intemperate, and one of the latter, an uncle of the patient, had alcoholic insanity. "Whole family nervous and rheumatic," two brothers having had acute rheumatism. Father died at seventy-seven of "brain softening," his memory and mental power having failed for a year or two before death. Mother healthy. No further history. Patient had an attack of acute rheumatism at six, and heart was damaged (mitral incompetence). She became asthmatic at thirteen, and could never undergo much muscular exertion. She was in disposition and character sensitive, very shy, fanciful, wanting in courage, and not very social, but intelligent. Could not be kept at school, because the work produced amenorrhœa and anæmia. Her appetite was capricious. She was always cold in her extremities, and she was thin, and her mammæ and full womanly form were never developed. She often suffered from dropsy. At thirty-four she began to suffer from headache; then that passed off, and she became hysterical. Supervening on the hysteria, and mixed up with it, she suffered from chorea for a year. At thirty-seven she became melancholic, with delusions as to her being very wicked. She had not been specially religious before. When the melancholia came on the asthma ceased; the dropsy disappeared, as well as the chorea and the hysteria. The melancholia was of the excited variety, and after a year passed into stupor, which in another year passed into dementia, not complete, with a good deal of motor excitement.

Comment on this instructive case is almost superfluous. I have no doubt whatever that there was much more neurotic heredity than the father's brain break-down at seventy-seven. We had, as an element of lowering of energy, a damaged heart from six years of age. The rheumatic tendency must have been strong to break out so early. The neurotic tendency was so shown, and also in the asthma, the impaired body development, the chorea, and the hysteria. By the way, she had a neurotic, not an abnormal palate, but a rabbit-shaped arch of lower jaw, and irregular teeth. Then when the neurotic disturbance reached the highest mental centres, it left the lower centres altogether—the headache preceding the melancholia, and disappearing when the mental pain came on. Thus the brain centres were affected from below upwards, the pneumogastric centres which caused the asthma, the basal ganglia which resulted in the chorea and hysteria, the special sense centres which caused the cephalalgia, and at last the mental centres which resulted in the melancholia. When their innate energizing power was exhausted came the dementia or mental death. I look on this case as an example of those not uncommon where development is not completed at the proper time, and is never quite completed in fact, and decay comes on early.

The Lesser Mental and Moral Morbid Changes of Adolescence.

There are a series of lesser mental and moral changes and perversities that are liable to occur in adolescents of both sexes with hereditary weakness, short of mania or melancholia or technical insanity generally, that are frequently much more difficult to treat and often almost as distressing as the insanities, and that I believe to be due to the same hereditary and pathological causes, and to be of the same essential nature as insanity. They consist in some cases of stupidity and lethargy, so that the girl or lad ceases to care for or to show intelligent curiosity in anything. Or they consist in an asocial development at this normally one of the most social of all ages. The youth ceases to mix with his friends, to play games, or to find pleasure in meeting his fellows. He shuts himself up, and his social instincts seem for the time paralyzed. Or they take the form of a causeless aversion to father, mother, sister, or brother, intolerance of control by them, and utter disregard of their feelings. All this time he gets on well with strangers, who see nothing wrong. Or they take the form of general "incompatibility" of temper, so that the person gets on with no one, and is cantankerous and suspicious all round, losing situations, quarrelling with friends, and making enemies everywhere. Or they take the form of impracticability, with visionary scheming and want of common sense, of paronoia. Or a frothy sentimental religionism develops itself, changing churches without reason, and taking always to new and striking modes of expressing their religious instincts. Or we have sudden immoralities contrary to the tenor of the former life. Or perverted sexual and reproductive trains of thought dominate the mind and affect the conduct. All these, being liable to occur as adolescent psychoses in hereditarily neurotic families, should certainly be looked on and treated from the medico-psychological rather than from the moral and disciplinary standpoints. Heredity and brain alone explain such divergencies from the normal social and mental types. They cause enormous misery in families, and their real nature and origin are commonly misunderstood, their kinship to mental disease being seldom thought of.

The morbid mental change, when it takes the form of simple diminution of the volitional power, so that irresolution, fickleness, want of power to follow any kind of continuous work, "morbid laziness," and lack of energy all round, are the chief characteristics, is particularly apt to be misunderstood. I was once consulted about a young man, P. Q., aged twenty-five, whose history was the following:—His mother was a "nervous" woman, and his father came of a strong and able stock. The family history of his mother could not be got. He had received a very good education, was above the average ability in some respects, and entered a commercial life about twenty. At first he got on well, and did his work well. Then he began to be troubled with seminal emissions with a loss of real sexual power. He did not masturbate, and had not led a bad life. Then he would leave his work for days without any reason, except that he felt that he could not possibly go on with it. This feeling soon got so strong that he could not be got to work at all. He simply stayed in bed half the day, and did little or nothing the other half. Such laziness had not been his characteristic in health, and came on periodically. He was not consciously depressed or unhappy. He could talk quite rationally on all sort of things—in fact, under the stimulus of other minds he brightened up in conversation into a charming and lively youth. But in regard to his ordinary daily life no motives, moral or otherwise, had any effect on his conduct,—fear, loss of prospects, duty, alike failed to rouse him. Outward pressure when continued beyond a certain point produced irritability. His memory was good. He was thin and flabby in his flesh. He was sent a voyage, and seemed to get back to his normal condition. He resumed work, but after a few months he fell back into his morbid mental condition, but still more exaggerated. He would not get up any day till the middle of the day. He would take two hours to his bath and dressing. He could sit down to no meal regularly. He would at times stop in the middle of dressing and stand stock still in the cold with no clothes on. He could seldom write a letter or read anything continuously. He would be got out for a walk, and once started he would sometimes walk on without much aim for ten miles till he was quite exhausted. He always ate very well, but was thin and bad coloured. His bowels were costive. At times he suffered from headaches, and was apt to be specially costive at these times. He always could talk rationally on any subject. Mental and social stimulus he seemed to enjoy and respond to, but he initiated no subject of conversation. He always felt better in the fresh air. His facial expression was intelligent, but indicated the neurotic diathesis. He was perfectly aware of his volitional paralysis, and deplored it greatly, and hoped he would get over it. He was willing and anxious to carry out every means for his restoration. He was not a "reproductive hypochondriac" whose mind dwelt on his impotency and seminal discharges, which in my opinion were not the cause but one accompaniment and symptom of his adolescent neurosis. The irregular periodicity in his symptoms connected his complaint with the other functional developmental neuroses.

I have seen many such cases, and they are not apt to recover if they continue for over a year. What can one do in such a case? I don't know anything better than what I recommended for this lad, viz., to board with a gentleman farmer in the country and "learn farming"—being really under control, and subjected to the daily stimulus of a sound vigorous will, and the influence of a physiological routine of life—as an object in life, to live in the fresh air, to have generous diet with some claret or bitter beer by day, to wear warm clothing, and to have a mentor almost always present to give volitional stimulus *ab extra*, to take strychnine, the phosphates, the mineral acids, quinine and phosphorus, and to have gymnastics, games, sea-bathing, and skin friction in moderation, and to wait patiently to see if Nature would, under these favourable conditions, restore the brain to its normal volitional power at the time of fully completed development.

I lately saw a somewhat similar case. A young man who had been a student for nine years, had often been slightly melancholic, was always most irresolute, was at times hypochondriacal, and would at these times declare he could only walk at a snail's pace, "something having come on him that prevented his using his muscles freely." One morning he said he found he could not reach his mouth with the spoon he was supping his porridge with, the next spoonful was worse, and the next worse still—a good example of the effect of auto-suggestion gradually weakening the volitional power. He was not strong minded, and had a poorly developed head, was narrow between the eyes, and a deformed V-shaped palate, though finely developed in his muscles. Every such case has its own features, just as every human face has its own expression.

As illustrating the frequent hereditary character of immoral qualities, and its frequent appearance just as a disease appears suddenly, often at adolescence, I quote the following from the American *Medico-Legal Journal* for 1890:—"A brilliant lawyer in a Southern State married a lady of most excellent family—beautiful, cultured, and wealthy—her father a most distinguished judge of the Kentucky bar, contemporary with Henry Clay, and charged with important public functions. For a long time he succeeded in concealing his alcoholic habits from the public, but at last fell a victim to his appetite. He had three children, one daughter and two sons. One son died of convulsions in infancy, the other at the age of nineteen had to be sent to an asylum for the insane. The daughter referred to developed a fondness for drink after her marriage, and died from disease induced from chronic alcoholism, leaving six children, two sons and four daughters, all seemingly healthy. One son, a lawyer, committed suicide at forty-two years of age. The second son, a physician of passionate and misanthropic temper, married and had two children, then broke off all relations with his family. One sister suffers from nervous disorders which take the form of hysteria ; two younger daughters remain unmarried, very intelligent, but are considered 'queer.' The eldest sister, a very handsome woman, a specimen of perfect physical development, and who seemed entirely free from peculiarities, was happily married to a man of opposite temperament and appearance. Every outward circumstance and condition was favourably indicated for happiness in this union. Six daughters and one son were born to them, and we fain had hoped that the curse on the house had been removed ; but the third daughter was feeble minded, had to be cared for as an infant, and was finally burned to death by her clothes taking fire. Another daughter, very intelligent, but of nervous temperament, and subject to intermittent attacks of insanity. The only son, a successful physician, but has developed an appetite for drink ; while the youngest daughter committed suicide by throwing herself from a third story window."

I was once consulted about the case of a lady, who up to fourteen or fifteen had been as ordinary children, but who since that age had been the despair of her teachers and the skeleton in the closet at home. While clever intellectually, and not given to gross immorality of any sort, she had exhausted all the arts by which disobedience, lying, perversities of every kind, and outrageous unconventionalities of dress and conduct, could break her parents' hearts. She seemed to be without affection except towards animals, tramps, and oddities generally. She always professed sympathy with the bad, the low, and the unfortunate. Respectability was an unpardonable offence to her. She was amazingly ingenious in her ways of "shocking" her parents and their friends by word and action; yet she was well read; she would pass muster among strangers for a month at a time as a clever, interesting, and original girl. She was about to marry a robust but respectable clodhopper when I was consulted about her. She did so, and had one or two children, and became apparently a careful mother and a frugal farmer's wife; but she was always eccentric and asocial, and never professed any affection for her parents.

There are many such cases where the moral and mental "twist" seems to follow a "love affair" or disappointment, but in whom the "love affair," the disappointment, and the succeeding mental changes are, I believe, mere sequences in an adolescent mental neurosis.

I am quite convinced that losses of mental inhibition and morbid impulsiveness of all sorts, without intellectual defects, occur in neurotic adolescents as really pathological mental phenomena. I have elsewhere described adolescent dipsomania,[1] and congenital absence of conscience and impulses towards crime. I think a recent criminal case in Scotland, that of the "Arran murderer," was an example of this. A weak, vain youth, with a notoriously bad heredity as regards mental taint, committed a murder under most extraordinary circumstances, without any real motive, and behaved in an insane manner afterwards, was convicted, but his sentence was afterwards respited as a result of a careful medical examination into his mental condition. I happen to know that he has had relatives who became subject to attacks of ordinary insanity during adolescence.

It would need much time to enter into the question of those most interesting phases of depression and transitory deep feeling that have been so common in the adolescent period of the lives of many men of genius. Literature owes much to them, and poetry too. What physician can read the lives and writings of Goethe, Carlyle, Cowper, or Thackeray without seeing that the world would never have had *Werther*, *Sartor Resartus*, or *Pendennis*, except their authors had passed through melancholic phases of existence at the time the reproductive nisus was rising into dominant strength over all the life, and thoughts, and feelings. Suicide was contemplated at the very time when those men were fullest of life. It did not then need disappointed love nor thwarted ambitions to make them "tired of life." Nor do we find such adolescent depression confined to such men of poetic temperament. We know that men afterwards of calmest or most sceptical minds—political economists and philosophers like Stuart Mill and Hume—passed through melancholic periods from twenty to twenty-five, and both these men then seriously contemplated suicide. Any attempt to explain or to understand such "Stygian darkness, spectre haunted," without taking into account the teachings of heredity and of the physiological psychology and pathology of development, would be entirely futile and misleading. Without going the length of Tolstoi, one could wish that biographers and writers of serious fiction more fully took into account the facts and the laws of physiology and heredity in doing their work.

---

[1] "Diseased Cravings and Paralyzed Control," by the Author, *Edin. Med. Jour.*, Dec. 1889, p. 517.

The Morphology and Premonitions of Adolescent Insanity.

If we could find any bodily or mental signs that would enable us to say in regard to any individual at twelve or thirteen, or earlier, "He will by-and-by be liable to adolescent insanity or other adolescent neuroses," it might lead us to devise such measures and conditions of life as might be prophylactic. As yet we are not able so to read their future definitely. The deformed palate that I have pointed out occurs in 55 per cent. of the adolescent insane: it is a new, and, to my thinking, a very important, though not a sure danger signal. Commonly also the form and facial expression are neurotic, and the development is retarded for the age. Frequently there are menstrual derangements, though I do not agree with Dr Bevan Lewis, that those are so common as he says. They are in my experience more common as symptoms after the mental disease has begun. Sensory neuroses in the head are very common. I lately admitted a girl of twenty-three who had had megrim from fourteen up to twenty, which then ceased and mental symptoms began. Headaches, feelings of confusion and heaviness in the head, and vertigo are common. Explosiveness and undue impulsiveness, with lack of self-control, are common. Undue seriousness and thoughtfulness, want of the mirthfulness and physiological unreason proper to the age, are sometimes followed during adolescence by attacks of mania, to the utter astonishment of relatives and friends, who all say that the victim was "the very last in the family" they would have expected to become insane. The lesser neuroses in a hereditarily-predisposed family should make us look to the possibility of the greater.

All sorts of postponements of developmental processes, all forms of asymmetry about the head and face, should be danger signals taken along with a neurotic heredity, though I have observed that certain members of neurotic families seem to have "taken" their share of nervous taint in stable trophic changes, such as squint, wry-neck, or some asymmetry of the face or form, some ugliness or awkwardness, and seem to have become in consequence exempt from any of the functional neuroses.

We are yet sadly deficient, however, in regard to exact facts or moderately reliable generalizations through which we might read a man's neurotic horoscope. The chief thing that we can do is to observe and put on record facts clinical and hereditary.

The Relationship of the Neuroses, and the Laws of their Hereditary Transmission and Interchangeability.

No doubt the neuroses are almost all interchangeable hereditarily more or less, but when a certain departure from normal brain working or structure has become differentiated in an individual or a family, we know that that same departure is by far most apt to appear again in descendants. Harelip follows harelip; convulsive diseases follow convulsive diseases; asthma, hysteria, and megrim breed asthma, hysteria, and megrim; epilepsy and insanity follow each other.

There are two very general laws or tendencies that prevail in different families as to the neuroses. In one case, Nature tends to revert back to the normal and healthy type, and disease gets less in intensity in different generations, till it disappears. In others it gets accentuated in each successive generation—nervous instability, or neuralgia, or headaches in parents becoming hysteria, and chorea, and asthma in the children, epilepsy in the grandchildren, melancholia in the great-grandchildren, and adolescent insanity with its dementia or idiocy, and extinction in the next generation. As yet we cannot lay down rules by which the extinction of diseases could be fostered, and disease accentuation avoided. And if we could lay down such rules, they would certainly need for their carrying out the practice of mating on scientific principles. How far we are from that every man and woman who has married for love well knows.

When the very principles of heredity are still in dispute, and the highest authorities differ as to whether acquired peculiarities are transmissible, we cannot be expected to have much formulated knowledge as to the laws of the hereditary transmission of nervous diseases. If acquired peculiarities are not transmissible, how did any disease ever become hereditary? The possible factors in the heredity of the neuroses are so complex and multiform that it must be one of the last branches of medicine to be fully elucidated. Those physicians who see much of nervous diseases sometimes come across facts that are absolutely staggering in their complexity. For instance, I lately ascertained, in regard to one of my patients, that there were several other cousins and second cousins all of the same generation insane. The families came from a secluded district, and I had the help of a very intelligent and interested relative in expiscating the facts as to the family history. I found that for three previous generations there was an absolutely clean bill of health as regards the graver neuroses—all but one slightly eccentric, weak-minded granduncle who did not marry. But in the great-great-grandfather's family there had been several cases of suicidal melancholia, which was the disease my patient suffered from. Here was a stream which had been replenished by seven new streams, yet from it had she received, in an apparently direct way, a special cortical disease which had lain dormant as a mere potentiality, but yet had been transmitted by three generations of nervously sound people. Now the transmission of a mere tendency, a potentiality, is a common fact that the imagination fails to grasp in any definite way. Nothing very unusual had happened to my patient to "bring out" the latent taint, except, perhaps, that she had been in easier circumstances than her ancestry, not having to work so hard, and had come to a large city to live, and had no children. But these altered circumstances had not happened to her cousins, who also became insane. I lately heard of another case in which two ladies of the same name became insane about the same age, and they were both melancholic, and both expressed in a precisely similar way their mental depression by a wringing of the hands, as if they were always washing their hands. No relationship between them was at first known, but being Highlanders, their family histories were ascertainable, and it was found they were fifth cousins. A common ancestor five generations back had apparently transmitted to each a tendency towards melancholia, and with it an excitation of a small cortical area in the motor centres of the brain, and all the subsequent intermixtures of blood, and all the varied conditions of life of these four intermediate generations, had not eradicated or changed this localized morbid tendency. Such cases give us an idea of the possible exactitude of the laws of heredity, but we cannot as yet grasp the exact conditions of this most complicated and obscure problem.

As another illustration of the complication and difficulty of the heredity of nervous disease, let us look at the following family history:—

I. Generation.—Patient's paternal grandfather was left-handed, had a violent temper, and was very eccentric and hypochondriacal for many years. Her paternal grandmother was a martyr to "rheumatic gout." They had eleven children.

II. Generation.—Of the eleven, eight died young,—one of consumption at the age of sixteen, another of fits after eating poisonous berries, and six in infancy from unknown causes.

The patient's uncle was very irritable, like his father, and also very hypochondriacal and even delusional. He was a talented professional man. A paternal aunt, who suffered from heart disease, was very nervous and very energetic; she became slightly deranged in mind once under puerperal fever, and again in senility. Both attacks were very temporary. The patient's father was very sensitive and very delicate; he had heart disease, and died during an attack of angina pectoris; he was subject to annual attacks of "influenza." He married a lady who died of chest trouble, "one of the lungs was affected." She had a sister—maternal aunt of the patient—who was an idiot, and a brother had softening of the brain; another brother became a famous professional man, but was peculiar. An uncle (I. Generation) had an organizing genius, and was a notable commercial man.

III. Generation.—In the patient's generation, a cousin attained the first rank in his profession, and was distinctly a man of genius. A brother of the patient died, æt. twenty-two, of epilepsy, which began when he was nine years old. The patient herself was very spirited and nervous. When aged fifteen she became ill and "depressed" mentally, and had leeches applied to her head; she used to fancy herself dying, and to picture her coffin on the hall table. She married when twenty-one years old, and had fourteen children in fifteen years. When aged forty-one she became depressed after the birth of twins, but recovered. When aged fifty-four (six years ago) she became melancholic, and has never recovered, being now an example of irregular *folie circulaire.* Her husband died of consumption. Of her brothers, one died young of consumption, another of tubercular peritonitis, a third had epilepsy, and a fourth had an abdominal tumour.

The following are the important facts in the history of the patient's fourteen children:—

IV. Generation.—14 children.

1. Son.—Handsome, clever, "peculiar."

2. Daughter.—Had "sunstroke" when aged nine. During adolescence she suffered from severe "sick-headaches," accompanied by impairment of vision and some impairment of speech. She now, at the age of thirty-five, suffers from severe chronic rheumatism.

3. Daughter.—Delicate. Subject to sudden swelling of the abdomen and extremities, accompanied by hysteroid symptoms.

4. Son.—Had "white swelling" in the knee when aged four; at the age of five deformity of the spine began, and he remained a cripple all his life; pulmonary phthisis began at eleven, and he died aged twenty-one.

5. Son.—Died when eighteen months old of fits after "suppressed whooping-cough."

6. Daughter.—In early adolescence suffered from spinal weak-

ness, for which she wore a jacket, and in later adolescence had severe neuralgia.

7 and 8. Twin boy and girl.—(Twin births have been very numerous in the family). The girl is delicate.

9. Son.—When aged sixteen he had epileptic fits following severe epistaxis, but they only lasted one day, and have not recurred. He is now aged twenty-six, is remarkably clever, and "takes after" his distinguished uncle in appearance and character.

10. Girl.—Died in infancy.

11 and 12. Twins.—Died in infancy.

13. Girl.—Healthy.

14. Girl.—Excitable, delicate, pretty. She suffered from a transitory mental derangement (two days' duration) before puberty.

I believe this would be found to be a very common type of family history in many of our noteworthy families. What a tangled skein of eccentricity and talent, of insanity and consumption, of convulsions and brain softening, of idiocy and genius! What a mixture of the good and the bad in the brain cortices of those four generations of men and women! The most desirable and the least desirable nervous and mental qualities came out, we cannot doubt, in strict obedience to hereditary law, which as yet one cannot formulate and can scarcely imagine. It will be observed how many of the neuroses were developmental.

A few General Considerations in regard to the Prevention of the Neuroses of Development.

Heredity is no doubt the real predisposing cause of them all, and the sole cause of many, some of them being in certain cases inevitable during growth and development. But heredity is a question of degree and intensity in each case, and it fortunately needs in most cases an exciting cause to develop the diseases that are its outcome. That opens up to us a large field of preventive measures against the adolescent neuroses. One or two general principles we are safe in following as making for prevention. Build up the bone and fat and muscle, especially the fat, by any means known to us during the periods of growth and development. Make fresh air the breath of life to the young. Develop lower centres rather than higher ones, when there is bad heredity. Don't give too much flesh and nitrogenous food during growth and adolescence, as being stimulants to the higher cortex, and to the too early development and dominance of the reproductive functions and the sexual nisus. Avoid alcohol and nervine stimulants absolutely, if possible. Do not cultivate, rather restrain, the imaginative and artistic faculties and sensitivenesses and the idealisms generally, in the cases where such tend to appear too early and too keenly. They will be rooted on a better brain and body basis if they come later. Cultivate and insist on orderliness and method in all things. The weakly neurotics are always disorderly, unbusinesslike, and unsystematic. Fatness, self-control, orderliness, are the three most important qualities for them to aim at.

But in spite of all we can devise and do, the developmental neuroses will appear in many cases. The hereditary fate of those who suffer from them was sealed generations ago. The whole subject is a great study worthy of the best minds of the future, and the facts I have brought forward may be suggestive and stimulating to future workers in this field.

III.—A CASE OF TETANY.

By Alexander James, M.D., Assistant Physician, Royal Infirmary, Edinburgh.

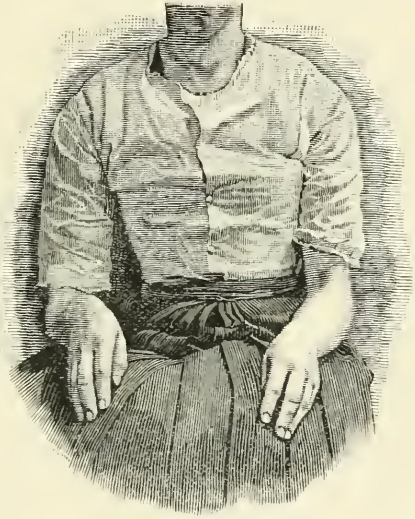
(*Case exhibited at the Medico-Chirurgical Society of Edinburgh, 8th April* 1891.)

Isabella D., æt. 21, residing at Leith, was seen and examined at the Infirmary, March 22nd, 1891, whither she had come to be treated for what she called "cramps" of both hands.

She is a well-nourished, healthy-looking girl, living with her parents in comfortable circumstances, and her work was ordinary house-work. With the exception of attacks of neuralgia during the winter of 1889-90 she had had no previous illnesses, and as a cause for her present state no depressing agencies, physical or mental, can be elicited. It is noteworthy, however, that she has a somewhat enlarged thyroid gland. For some weeks before last New Year and since, she states that she has been feeling a numbness in her hands and arms, especially the right. This numbness has been felt every day, more or less, since the New Year, and seems to come on or get aggravated whenever she goes out into the air. She also feels numbness in the face, especially in the eyes and upper lip. The lips then feel as if stretched over the gums.

In addition to this numbness she experiences, when exposed to cold or when excited, the so-called "cramps," *i.e.*, the condition of tetany in her hands and arms, and to a less extent in her feet and legs. These cramps have been coming on nearly every day since the New Year, and lasting for two or three hours, and she states distinctly that the numbness does not always precede the "cramps," and that the "cramps" sometimes occur without numbness. They occur mostly in the morning, but sometimes at night, and their onset during sleep has sometimes awakened her.

When the cramps are present the hands show the characteristic position of tetany. The fingers are straight,—flexed, however, somewhat at the metacarpo-phalangeal joints,—and all slightly inclined to the ulnar side. The thumb, also straight, is drawn strongly into the palm, the hand assuming, as aptly described by Trousseau, a shape like that of the hand of the accoucheur when he introduces it into the uterus. The muscles of the forearm feel hard and contracted, but the patient, during the existence of the cramp, can still move the fingers to some extent. There is also, when the tetany is present, great vasomotor dilation, so that the hands are darkly congested, as in the asphyxia stage of Raynaud's disease, and the patient states that during the "cramps" they sweat a good deal.



In the feet the toes are bent towards the sole. The dorsum of the foot is strongly arched and the heel pulled up by the muscles of the back of the leg. There is also some tendency to vasomotor dilation, but the symptoms as a whole are much less pronounced than in the arms.

These "cramps" seem to come on readily when the parts are exposed to cold, and pressure on the nerves and vessels of the limb seem to some extent also to bring them on.[1]

There is no anæsthesia, and on testing the electric reactions of the affected muscles it was found that with the interrupted current their irritability was slightly less than that of the muscles of a healthy individual examined at the same time (*i.e.*, contraction occurred in her case when the secondary coil was at 5½ cm. from the primary, as compared with 7 cm. in the case of the healthy individual). With the galvanic current the order of contraction was the normal one, viz.,—Kcl, Acl, Ao, Ko; and with 15 cells of the battery Kcl. produced slight tetanus.

---

[1] The accompanying woodcut is taken from a photograph, and at the time the photograph was taken the hands were not so markedly affected as usual, and the feet were hardly affected at all. It shows fairly well the enlargement of the thyroid gland.

She is being treated with rest, fresh air, quinine and iron, and at present (April 1st) the disease appears to be running a fairly satisfactory course.

IV.—ON THE TREATMENT OF ECLAMPSIA DURING PREGNANCY.

By F. W. N. Haultain, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine; Obstetrician and Gynæcologist, Royal Dispensary, Edinburgh.

(*Read before the Edinburgh Obstetrical Society, 10th June* 1891.)

There are few situations more embarrassing to the obstetrician than when brought face to face with a case of eclampsia occurring during pregnancy. True, if labour pains have commenced, and expulsion of the uterine contents is inevitable, the lines of treatment are comparatively uniform; the anxiety, though great, is but shortlived; the ultimate issue of the case is, I might almost say, relegated to the realms of fate.

But it is those cases where, by dint of treatment, the convulsive seizures have been removed without the advent of labour that are to the obstetrician most perplexing. It is with this latter class of cases this communication is chiefly concerned, four examples having come under my notice—three of them, curiously enough, within the last year. They are briefly as follows:—

Case I.—Primipara; was seized with convulsions at the end of seventh month of pregnancy, which, through treatment by chloral, pilocarpine, purgatives, and chloroform, abated without the advent of labour. At the time of the fits the urine turned solid on boiling, but eventually the albumen was reduced to a mere trace.

By strict maintenance of milk diet and the occasional administration of saline purgatives, the amount of albumen, though varying, never exceeded a fourth till within a fortnight of her expected confinement, but after this time it was only by the constant use of diaphoretics that it could be kept even at this level.

Labour came on three days before the calculated time, and with it a severe succession of convulsions, the patient dying next day after being twelve hours comatose.

The labour was easy and natural. The child, however, was dead-born.

CASE II.—Primipara; was seized with a severe convulsion during the seventh month of pregnancy, so severe that after but one fit there was complete blindness for twenty-four hours. The treatment, as in Case I., was again adopted with complete success.

The urine, which turned solid on boiling at time of fit, showed but a trace of albumen next day.

Strict maintenance of milk diet was successful in keeping the amount of albumen in abeyance, but the slightest change of diet to fish or other light foods resulted in an increase of albumen. There was a considerable increase at time corresponding to menstrual periods, more than a fourth being registered for two days at each of these periods.

About three weeks before the expected confinement the albumen began to increase in quantity in spite of treatment. It was, therefore, resolved to empty the uterus at once, which was done with the assistance of Dr Halliday Croom. No fits occurred, and the patient made an uninterrupted recovery. The child was born dead.

CASE III.—Multipara; seen with Dr Sym; was seized with convulsions at the eight and a half month, which, in spite of treatment, returned at intervals.

The uterus was, therefore, emptied, without any recurrence of fits till two hours after the operation, when there was a smart succession of convulsions, which, however, gave way to treatment. Uninterrupted recovery. Child alive.

CASE IV.—Multipara; third pregnancy; seen with Dr Lockhart; seized with convulsions in eighth month of pregnancy. Treatment as in Cases I. and II. was again successful. Urine also presented same conditions. Uterus emptied at eight and a half month without fits returning. Uninterrupted recovery. Child alive.

From the cases quoted it will be noted that in three of the four treatment was entirely successful in temporarily removing the fits.

The means adopted in each case were the same,—1st, Subcutaneous injection of ½ gr. of pilocarpine, and the application of heat by means of hot-water bottles to encourage sweating; 2nd, 1♏ of croton oil as a purgative; and 3rd, 30 grs. of chloral hydrate, followed by ʒj. of syrup of chloral every hour for four hours as a nervine sedative.

If the patient was unable to swallow, the chloral was given subcutaneously (8 grs.), or per rectum (30 grs.), every hour for five hours. Deep anæsthesia by chloroform was also had recourse to in Case II.

By the above treatment the amount of albumen was markedly decreased in the course of a few hours, and the danger for a time averted.

For the maintenance of this condition of the urine the adoption of milk diet, as recommended by Charpentier, was rigidly enforced, no other food being allowed. Once or twice a small quantity of other food was tried, but an immediate rise in the quantity of albumen always followed, and it had to be given up. Though partaking of nothing but milk, the strength of the patient was in every case well maintained, and the child when born appeared well nourished.

In conjunction with the milk diet, there was given Tinct. digitalis 5♏ thrice daily, and on the occurrence of a rise in the amount of albumen, a saline purgative. The *rationale* of the above treatment commends itself, according as we look upon the etiology of the disease.

Looking, therefore, upon the condition as due primarily to renal insufficiency, which secondarily gives rise to fits from the consequent poisoned state of the blood causing general and extreme arterial tension from contraction of the peripheral arterioles, the treatment seems to me physiologically correct.

During the fits it is evident that it is necessary to diminish the general arterial tension and remove the poisonous ingredients of the blood, and for this purpose pilocarpine as a sudorific, and croton oil as a rapid purgative, seem eminently suited, while chloral is invaluable from its threefold action,—1st, as a cardiac depressant; 2nd, as a vaso dilator; and 3rd, from its direct depressing effect upon reflex nervous action.

After the acute stage is over, rigid milk diet was the mainstay of the treatment, while small doses of Tinct. digitalis aimed at increasing the efficiency of the kidneys. Saline purgatives were uniformly successful in reducing temporarily the amount of albumen.

Having succeeded in combating the fits successfully, and brought the patient to at least a temporary state of health, the situation still remains one of the utmost gravity and anxiety. What is the best course to pursue? Are we to let gestation go on to a natural termination, or are we to induce premature labour, and if so, how? Authorities differ. Charpentier says,—"Premature labour is never to be induced, and still less abortion." Lusk, quoting from his own experience, says,—"Waiting upon Nature has proved uniformly disastrous, while the induction of labour has furnished me with a certain proportion of recoveries." In this Barnes concurs. Playfair is ambiguous, and says,—"If labour has not begun, no active means to induce it should be adopted, although the membranes may be ruptured with advantage."

After the disastrous termination of my first case, on being summoned to Case II., I felt determined that I would not court a repetition, and resolved to try induced labour.

The question next presented itself, By what method was the uterus to be emptied?

All methods recommended seemed to me to be objectionable, on the ground that they induced uterine contractions which, by their raising arterial tension and reflex spasm, tended to court the very conditions to be avoided. Having on a previous occasion had the opportunity of emptying a uterus at a sitting without evident contractions in a case of advanced cardiac disease, I determined to try rapid delivery. With the help of Dr Halliday Croom, through whose aid and experience I am inestimably indebted for the successful issue of the case, the patient was delivered without an evident pain and without an untoward symptom, the convalescence being also uninterrupted.

Trusting to this experience, the two subsequent cases were treated in an exactly similar manner, with a still happier result, as in both the child was saved.

The technique of the operation is as follows:—

Having been brought to the fittest condition possible, *i.e.*, the albumen to a minimum by means of sweating and a smart purge, and 30 grs. of chloral having been administered the previous evening, the patient is put deeply under chloroform, and dilatation of the cervix commenced, a process which is accomplished entirely by the fingers. The cervix having been sufficiently dilated to allow of the application of the forceps, the membranes are ruptured, and the instruments applied to the head. The slightest traction is now sufficient to dilate the cervix to its full extent, after which more vigorous pulling is required to bring the head through the pelvis. The perineum yields as in ordinary labour, and the operation is concluded.

The placenta in no case gave rise to any trouble, the third stage being quite natural. The operation lasted in the first case two and a half hours, while the other two occupied two and a quarter and two hours respectively.

The fingers alone are quite efficient for the dilatation of the cervix, and therefore Barnes' hydrostatic dilators are unnecessary. The fingers are introduced successively, and eventually the thumb, after the introduction of which the manipulation becomes both easier and more effective. From the rigidity of the cervix, considerable inconvenience may be caused by the fingers becoming cramped in their efforts to procure dilatation, but in spite of this I consider they are to be preferred to any artificial dilators, as the sense of touch is of great value in preventing too violent manipulation, the tension of the cervix regulating the necessary force.

The time taken to dilate the cervix sufficiently to allow of the easy application of the forceps varied in my cases from sixty-five minutes to one and a half hours, and in no case were the membranes ruptured accidentally. After the application of the forceps, little further digital dilatation was necessary, the gentlest traction being sufficient to cause the head to act as a most efficient dilator.

After full dilatation of the cervix, the case is similar in every respect to that of an ordinary instrumental labour. The vagina and perineum offer no more than ordinary resistance, they having been well stretched in the process of cervical dilatation, the introduction of the whole hand into the vagina being at that time necessary.

Unfortunately, in the first case, there being a slightly contracted pelvis, it was thought that turning would be the most favourable method of delivery. The elasticity of the cervix, however, impeded the necessary rapid delivery of the head, and the result was that the child was born dead. Believing, as I now do, from an ever increasing experience, that in no case of vertex presentation does treatment by turning offer any advantages over the application of axis-traction forceps, I feel that in all cases forceps should be applied if the head present, the chances for the life of the child being far greater, while the danger to the mother is in no way increased.

In the recommendation of the above method of obstetrical treatment, I know I am exactly opposed to the views of many of our leading authors in Midwifery; but the success of the treatment, so far as I am concerned, is sufficient guarantee to me for its adoption, and it seems to me that, as a rational method of treatment, it cannot be found fault with.

If one looks upon this method of treatment from Charpentier's point of view, no wonder the very idea of adopting it is dropped at once. He says,—"It is a deplorable procedure, . . . no matter how gently it may be performed, it always results in contusions or tears of the cervix, sometimes with resulting gangrene. It is only possible to practise it after the cervix has become softened in consequence of the preceding hæmorrhage." This happily, however, is quite opposed to my experience.

The main argument advanced against rapid delivery, however, is that uterine manipulations set up convulsions reflexly, thus upholding the theory of Scanzoni, Dubois, and others, that eclampsia is a neurosis due to reflex irritation of the spinal system.

This theory, however, in our cases has not the semblance of support, extremely active manipulations of the cervix never having induced convulsions.

What was mainly intended in the treatment above described was the avoidance, as far as possible, of active uterine contractions—these in my opinion, from their effect in raising the arterial tension in a vascular system already at high pressure, being the chief agents in the production of fits.

That pains are a potent factor in causing fits there is little doubt, as from Wieger's statistics we find that in 455 cases of eclampsia, 236 occurred during labour, the remainder being equally divided as occurring during pregnancy or the puerperium. One must, therefore, look upon the advent of labour as unfavourable, a fact which is well supported by the knowledge that labour having been thoroughly established, cessation of the fits almost never occurs till after the uterus is emptied.

In support of the treatment by rapid delivery, as above advocated, there are the following arguments:—

1. That the patient can be brought into the most favourable condition possible before active interference is commenced, *i.e.*, albumen at a minimum, arterial tension greatly diminished by pilocarpine, and reflex action reduced by chloral.

2. Uterine contractions are almost entirely avoided by the deep anæsthesia, and by this means a potent factor in the production of fits is dispensed with.

3. The duration of labour is reduced to a minimum.

4. The results as regards mother and child have in my cases been most satisfactory.

Before closing I should like to bring before you briefly a few points in regard to the vexed question of the etiology of the disease which close observation on the above cases has shown.

It may be premature to draw deductions from such a limited experience, but fortunately such examples are rare, and a large personal experience is thus forbidden to most.

In all my cases there was a defective renal excretion, as evinced by the urine being loaded by albumen at the time of the fits. That this defect was the primary and predisposing cause of the condition is strongly supported by the fact that, after the kidneys were got into good working order (as evinced by the small quantity of albumen in the urine), the fits ceased, and the patient remained in good health.

The increase of albumen at the periods corresponding to the menstrual periods in spite of treatment is of much interest in supporting the theory that the albuminuria is due to renal congestion coincident with pregnancy, it being well known that a periodic congestion of the pelvic organs corresponding with the menstrual epoch takes place during gestation. The actual convulsions may, therefore, in many cases be looked upon as due to uræmia, with its poisoned state of the blood and high arterial tension.

That defective renal excretion is not a *sine qua non* I am well aware, although it is associated with the vast majority of cases; and that a state of high arterial tension sufficient to cause fits is not necessarily associated with uræmia. I am also well aware these may probably in some cases be due to reflex neurosis, as Scanzoni has demonstrated.

Uterine contractions would also seem to be a potent factor in the production of eclampsia, and this probably from the fact of their raising the arterial pressure.

That uterine contractions alone are sufficient to cause true eclampsia is improbable, but in an arterial system whose vessels are already overfull the supervention of pains is like putting a light to gunpowder.

That they are necessary for the production of convulsions is, of course, gratuitous to refute, as we know that convulsions occur in the non-pregnant state, but that they are a powerful excitant is, I think, strongly supported by the facts:—

1. That fits most frequently occur during labour.
2. That labour having commenced, fits rarely cease till it is finished.
3. That if contractions do not occur, the case is frequently treated to recovery.
4. That in many cases where eclampsia has developed during pregnancy and been arrested, it has recurred with the advent of labour.

The statements I have brought forward are, I know, open to much controversy, as all communications on this complex subject must necessarily be. They are by no means intended to be exhaustive, but are mainly directed to give a rational method of treatment which in my hands has proved most satisfactory, and which may prove beneficial to some Fellows of this Society who may at some time be in a dilemma as to the conduct of a case of eclampsia during pregnancy, which is at all times an anxious and difficult problem to solve.

V.—OBSERVATIONS ON A CASE OF URETHRAL SYNOVITIS.

By Thos. Dobson Poole, M.B., C.M. Edin.

Present Condition.—C. H., aged 16, height 5 feet, weight 7 stones, with good family history, suffers from a deeply-seated urethral stricture. No other previous illnesses. Lips good colour, and the teeth are in a remarkable good condition, being large and well set. In regard to the circulatory system, the second sound of the heart is reduplicated, and the pulse is 50 per minute and regular. The skin shows that there is a scar in either groin, and one on the perineum. Urine is normal in colour and quantity, and there are no deposits. Bones and joints normal.

History.—Patient's mother states that, at the age of 5 years, he was playing with some boys when one of them "nipped" the end of his penis, for which injury he was taken to the County Hospital (York), where an operation (apparently circumcision) was performed. She also says that ever since this he has been troubled with his water. It appears also that, about the age of 12, while living within easy reach of the Hospital, he was for four months an outpatient, and according to the patient's own account, was treated by the catheter, and had an abscess opened in either groin near

Poupart's ligament, a linear scar in either groin testifying to this fact. After this he worked on a farm, where his food and surroundings were good.

The further history is that, in the beginning of February last, he was taken ill with sudden inability to pass urine, and sickness, and pus was soon after passed per urethram. Dr Kebbell, who attended him then, succeeded with difficulty in passing a catheter, and opened an abscess in the perineum. The catheter was then passed once a day, the sole trouble being the stricture.

In the latter part of February the hip-joint began suddenly to swell, to be painful to the touch and on movement, the position of the thigh and leg being not unlike that seen in backward dislocation of the hip. This was ere long followed by a soft, tender, fluctuating, somewhat elongated swelling in the region of the right sterno-clavicular joint. When the tenderness had almost gone and the swelling partly subsided, the right elbow began in the same spontaneous fashion, with heat, swelling (which was equal above and below), painful to the touch and on movement, though not so when at rest. Forearm flexed at right angles to upper arm, and thumb pointed upwards. Body temperature, 102°.

In the course of a week the inflammatory symptoms of the elbow to a great extent disappeared, though there was some pain on movement and inability to extend the joint fully. When the sterno-clavicular joint had recovered, and the elbow and hip were slowly progressing, the left shoulder began (on 3rd April) with great swelling, pain, etc., and was accompanied with much fever (temperature 103°), sickness, and other manifestations of symptomatic fever. The patient's aspect showed that he was very ill.

April 5.—Shoulder painful on movement. Temperature, 101°.

April 6.—Shoulder improved.

April 7.—General improvement. Iron tonic given.

April 9.—Much better. Stiffness of elbow.

April 18.—Shoulder recovered.

This was soon after followed by recovery of the elbow, the recovery of the hip being delayed, and which took place at the end of May, when the patient got up and was convalescent.

During the whole period of the joint affections patient had the catheter passed twice a week. A week's stay at the seaside was so beneficial to him that he was enabled to do some work on a farm. After patient got up, catheter passed once in a fortnight.

Again, an 14th August, I was requested to see him, and found the right elbow very swollen, hot, and painful to the touch and on movement, though not painful when at rest. The night before he had gone to bed well, and this swelling of the elbow developed suddenly, and was at its height before morning. Temperature, 102°. No urethral discharge. Took mixture containing liq. am. acet. and sp. æth. nit.; catheter passed; elbow poulticed. The elbow completely recovered in three days.

The characteristic features of the case were,—the rapidity in which the joint affections reached their height; no sweating or shifting of pains, as in acute rheumatism; the attacking of first one joint, then another, but never were two joints suffering simultaneously in the same degree; the complete (functional) recovery of the joints.

Whether we have here a case of congenital stricture, first discovered at the age of 5, as the mother imagined or affected to imagine, or a case of some specific urethral irritation (at about the age of 12), followed by stricture, is a question for conjecture. But, however this may be, it is certain that there was no discharge from the urethra during the joint affections.

In the *British Medical Journal* for 1885, Mr Clement Lucas recorded a case, having some resemblance to this, of a child suffering from gonorrhœal ophthalmia with an affection of the knee and elbow, the joint affections being more exaggerated when the discharge from the eye was greater. Mr Lucas saw no reason why the conjunctival surface should not afford as favourable an absorbing surface as the urethral mucous membrane.

If we look upon urethritis as having several causes, one of which is the kidney-shaped gonococcus (giving rise to gonorrhœa virulenta), and the others any irritant, either mechanical (primarily) or a certain class of micrococci which find in the urethra (or from thence in the conjunctiva) a suitable laboratory for the manufacture of their ptomaines, we can easily understand that the absorption into the system of these ptomaines in predisposed subjects may give rise to an inflammation of the synovial membrane or any analogous structure. And, moreover, we can imagine that stricture, when being a *sine quâ non* for the production of such ptomaines, may be a non-mechanical and indirect cause of sterility—that is, by causing sterility in the female.

This latter receives some support from the opinion started in America, supported by the most eminent British gynæcologists, and well received by all those who have impassionately studied it —that latent gonorrhœa is capable of setting up most serious mischief in the female.

It would have been an interesting experiment to have touched the conjunctiva of a rabbit with a previously aseptic catheter after passing it into the urethra of this case, and noticed the effect on the conjunctiva.

I think the term urethral synovitis preferable to the old term gonorrhœal rheumatism.

I may mention that the stricture, which was probably annular, was situated apparently just in front of the triangular ligament, and was, except at the first, easily passed by the catheter (No. 8), which was previously anointed with carbolized oil.

VI.—THE MEDICAL PROFESSION IN THE UNITED STATES.

BEING THE SUBSTANCE OF THE PRESIDENTIAL ADDRESS DELIVERED TO THE CARLISLE MEDICAL SOCIETY AT THE OPENING MEETING OF SESSION 1890-91.

By NORMAN WALKER, M.D. Ed.

I PREFACE these remarks by a quotation from an American source, to show that my criticisms are not simply those of an insular bigot. I have thought it wise not to give the names of all the schools I visited. There are probably many equally bad which I did not visit, and nothing would be gained by their identification.

"The American student in visiting European schools may see certain things not done so well as at home,—his American heart then swells with just pride; but most probably his keen eye will not be long in observing the great thoroughness that pervades medical study and practice in Europe,—the assiduity, patience, and perseverance of investigation; the care, accuracy, and deep learning of clinicians, and it then dawns upon his mind that the great American *rush* through life, in Medicine as well as in other avocations, must be tempered by that calm reflection, deep learning, and eager love of truth which are the only foundation that will support the temple of Medicine as erected by the Pasteurs, Kochs, and Listers of the day."—From the *Times and Register*, by E. Laplace, M.D., Professor of Pathology and Clinical Surgery in the Medico-Chirurgical College of Philadelphia.

The medical profession of the United States is regarded in this country with such a truly calm British contempt, while its education is considered as chiefly conspicuous, either by its entire absence or by its gross inadequacy, that I was exceedingly glad to have thrown in my way the opportunity of making some observations for myself, and of learning, by visiting some of the schools, and conversing with the professors, practitioners, and students, how much was true and how much was libel in connexion with this important subject. I say important, because though the Americans are no longer of us, they are not far from us, and the American nation is by a good many millions the largest English speaking nation of the earth, while the numbers of British medical men who yearly seek a new home on the other side of the ocean may be glad to hear from an unbiassed observer something of the position of the medical man on that other side. I do not, of course, suppose that any large proportion of the members of this Society are thinking of emigrating, but it is probable that in another form these remarks may reach a larger audience.

The subject of the medical profession in any country is such a vast one that I am afraid I must go back to my early Presbyterian training and refer to the matter under various heads, summing up with the old-fashioned "finally" and "in conclusion."

First, then, I will deal with the subject of the educational facilities of the profession in the States.

It is said by Max O'Rell that on reaching your hotel by cab from the wharf on arrival from England, that the cabman will open the door of your cab and say, "Well, sir, what do you think of our country?" And you are exceedingly lucky if you do not have that question put to you at least twice a day during the whole of your stay in the country. It is wise to say that you think a great deal of it. This makes things pleasanter for you during your stay; but in truth it is a question which it is impossible to answer. America is so vast a country, that you have in it all varieties of country, all sorts and conditions of men, and all sorts of conditions and varieties of medical education, and therefore it is impossible to sum up in one conclusion the infinite varieties of medical teaching in the States. I shall therefore first give you a short account of the various schools which I visited, and then sum up the result of my general observations.

The course of my journey was by accident favourable to plan of this sort, as I began at the very bottom, and gradually worked up to the larger and more established schools.

On my voyage across to America I fell in with an old college friend. When the New York pilot came on board he brought with him a packet of newspapers. Soon after my friend came up to me with the *S—— Chronicle*, one of the organs of the town where he has been practising for the last five or six years. He directed my attention to a paragraph which was headed, "University of ———: Founding of the Medical Faculty." In the list of professors I found his name as professor of Ophthalmology, and this was to him the first indication (he had been four months in Europe) of the projected existence of this Medical Faculty.

As every one almost was out of town on my arrival in New York, S—— was the first town in which I saw anything of the medical life of America. One morning, in conversation with the Dean of this new Faculty, I expressed to him the opinion that S—— was rather small for a medical school (it is about the size of Carlisle—50,000). He entirely agreed with me, and then told me the whole story of the founding of this Faculty. The Baptist Congress of the district had established a university for the education of their ministers in a town some distance away. Any one can establish a university, and obtain from the State Government the power of conferring degrees in the Western States. In the Eastern ones there is a little more difficulty. This congress, thinking they would like their university to be complete, decided to found a Medical Faculty, and as S—— is the largest town in their district, they decided to establish it there. This is quite a common thing in the States. The medical school is often, and, indeed, in almost all the famous schools, always at a distance from the universities, which are, as a rule, located in small country towns, while the medical school is of course in some larger town—it may be five, twenty, even fifty miles away. For instance, the famous Harvard (Boston) School has really no connexion with the old university, which is situated at Cambridge, some distance on the other side of the river from Boston; while the State University of California is thirty miles distant from San Francisco, the seat of the medical school. Dr B. told me that he had been approached by the governors of this university with a view to his taking in hand the founding of the medical school, and had done his best to dissuade them from the establishment of what would certainly be an incompetent school. All the answer he got to his remonstrances was, that they had decided on the matter, and if he, on behalf of the practitioners of the city, would not aid in its formation, that they would have no difficulty in getting their professors elsewhere. So that in self-defence he was compelled to aid in the formation of the school. I said I should be glad to be present at the opening of the school if it should be during my stay; but he replied that they were not going to commence for at least a year, as most of the professors *wished for that time in order to get up their subjects.* The city is supplied with three small denominational hospitals which will be the only means of affording clinical instruction to the students when the school opens.

The next school I came across was the University of C——, situated at D——, where, unfortunately, I just missed the inaugural lectures. I met, however, two of the professors there. With one of them I visited one of the hospitals. In answer to my inquiries as to whether he held any post in connexion with the school—I did not then know he was a professor—he told me that he had been professor of Physiology for three years. I asked him if he took any special interest in that department, and he said, No, but it was the only chair vacant when he came to D——. "But," he added, "this year I shall have one more to my taste—*the chair of fractures and dislocations.*" He confessed frankly (he was a Harvard man) that his physiological course of lectures was very incomplete, that there was no practical instruction, and that he really had not time to prepare a proper course of lectures. "You see," he said, "I get nothing for it, and I can't afford to neglect my practice for nothing." As professor of Physiology he had to lecture three days a week, while his new chair would only necessitate one weekly lecture.

The next school I visited was in San Francisco. There are two schools there—the one I visited, the Toland, being connected with the State University of California, situated at Beverley, some thirty miles away.

This is, comparatively speaking, an old-established school. It is in better working order than most of the Western schools, and no doubt owes this partly to the frequent leavening with British teachers. At present the professors of both Principles and Clinical Medicine hold Edinburgh qualifications. I attended several of the lectures there. From Dr M'Nutt, the professor of Practice of

Medicine, I heard an extremely able lecture on apoplexy. It was very practical, intelligent, and clear, and had a good deal of the nature of a clinical lecture about it, while the way in which Dr M'Nutt referred to the details of apoplexy showed that he evidently thought it wise not to presume too much on his student's intimate knowledge of cerebral anatomy.

The lectures on Anatomy and Physiology which I heard were what they called "quiz" classes—that is, the professor questioned the students in rotation. The Anatomy class reminded me of the examination which is held in our schools before the student is allowed to commence dissecting. The professor picked up a bone and said, "What muscle is inserted here? What goes through this notch?" etc. He took, however, all the bones of the body. Not more than one-third of the students would have been allowed to commence dissecting in the Edinburgh rooms. About the Physiology lecture the less said the better. Any intelligent layman who had attended the course of Combe Lectures as delivered by Dr Andrew Wilson would probably have known more of physiology than the majority of the students of that class.

On the other hand, I attended at the hospital the clinical lectures on Medicine, Surgery, and Ophthalmology, and found them very well conducted classes. I need say nothing about the medical clinique, as it is conducted by a recent graduate of Edinburgh, Dr Kerr, and is exactly a copy of the system there; but the other two, conducted by Americans, were exceedingly good and practical,—in the surgical ward several cases being dressed, explained, and the students questioned about them. In the eye clinique, the students, about twenty in number, sat around, and the cases were brought one by one before them and fully explained—the diagnosis and treatment being thoroughly and practically gone into. The ear cases were also taken at this clinique, and every student had the opportunity of seeing each case. Unfortunately I was unable to see through the anatomical rooms. There is great difficulty in getting subjects, and the rooms during my visit were entirely empty and shut up.

The next school which I visited was the once notorious Rush College, which is now very large and flourishing. There must have been at least 500 students present at a demonstration of skin diseases. The professor was from home, and the demonstration was given by his assistant. Owing to the size of the room, and the weakness of the demonstrator's voice, not more than a fifth of the students could either see or hear. I heard also an extremely able lecture by Dr Parkes on cellulitis, thoroughly practical, and bristling with originality and suggestions. The greater part of the lecture was devoted to treatment.

My next visit was to Baltimore, where in the Johns Hopkins' Hospital the motto in every department is "*Thorough.*" It is in its arrangement and constitution the finest hospital that I have ever visited. The professors have each a salary of £1000 a year, and have their rooms and board in the hospital if they wish it. They are expected, therefore, to devote a large part of their time to the hospital, and many of them devote their whole time to it. They have been imported from all parts of the world. The Professor of Medicine is a F.R.C.P.L., and of Physiology, M.B. Oxon. Dr Mathew Hay of Aberdeen accepted the chair of Therapeutics, and would have been there now had not an unlucky speculation on the part of the trustees made it impossible to pay his salary, while it was only a trifling difference of opinion on some question of detail which prevented the acceptance of the chair of Surgery by the most famous of our Western surgeons. Although the course in America is only three years, almost all the men who have any ambition take a year or two at one or other of the post-graduate schools; and there were several men at the time I visited the school living in the hospital and working at the different cliniques.

In the Medical department Professor Osler is supreme, and gives ward cliniques and clinical lectures in addition to superintending the out-patient department, which is quite a large one. A small pathological laboratory is reached by a passage; and here, under the superintendence of Dr Welsh, the pathological investigation of each case is carried out in a most thorough manner.

In the Surgical department, under Dr Halstead, antiseptics are carried out to perfection. The doctor and all his numerous assistants wear linen clothes, clean every day, and everything about the operating room is kept in a state of scrupulous cleanliness. Large glass cisterns containing various antiseptic solutions are ranged round the walls, and tubes leading from them reach a rack over the table where they can easily be reached by the hand.

In the Gynæcological department I saw Dr Kelly do two laparotomies, which is his average number three days a week. I do not presume to criticise other operators, but I never saw laparotomy done more quickly or more neatly than by Dr Kelly. Everything is so admirably arranged and close at hand; there is no hunting for any particular instrument, as all instruments are kept in the operating room, and those wanted are arranged on a swing-table just at the operator's side. He seals over the wound with a solution of iodoform in collodion, and all the cases which I saw which had been operated on during the previous ten days were doing remarkably well.

These are the only complete practical departments of the school at present; but if any one wishes to devote some time to the study of any of these departments, and is unacquainted with French or German, he will find that there are few places where he can better employ his time than in the Johns Hopkins' Hospital. (Since my visit the Anatomical department has been opened under Professor Councilman.)

There are in Baltimore two other schools of medicine—the University of Maryland and the College of Physicians and Surgeons.

These—though I have no doubt excellent schools, as judged from an American standpoint—are vastly inferior to the Johns Hopkins'.

From Baltimore I went to Philadelphia; and if I must do any comparing, I would certainly award to the University of Pennsylvania the first place among the teaching schools of America. It is, in the first place, fortunate in its professors. As proof of this I have only to mention the world-renowned names of Weir Mitchell, Pepper, and Wood. The former I did not see. A lucrative practice, two rich wives, and successful speculations in real estate, have placed Dr Weir Mitchell in such an independent position that he takes an annual holiday of four or five months, and devotes his leisure during that time to the writing of novels. Dr Wood was for my visit unfortunate in his subject, which was Anæsthetics; and the word treatment to which Sir James Simpson was subjected was trying to an Edinburgh man brought up to regard Sir James as one of the chief benefactors of humanity. He is certainly not regarded in that light in the States. Dr Oliver Wendell Holmes, with whom I was so fortunate as to have some conversation when in Boston, out-wooded Dr Wood in his denunciation, and gave me, from his point of view, the early history of the administration of anæsthetics in the Massachusetts General Hospital, indignantly denying Simpson's claim to the title of the inventor or introducer of either chloroform or anæsthesia.

Dr Pepper, whose System of Medicine is probably familiar to many, is still quite a young man, and looks fully ten years younger than his age. His lecture was a most able, interesting, and instructive one on Pleurisy; and both he and Dr Wood handled these subjects in a thoroughly scientific manner, very different from the schoolmaster type, which is far too common in the American schools. At his hospital clinique the following day he illustrated his lecture with cases taken from the wards. He is a thorough physician of the old school in his desire to do, if possible, without the aid of the surgeon, and in treating empyema he prefers the introduction of a small tube through the canula, by means of which the pus may gradually filter away, to the free incision which is so commonly practised elsewhere. Neither is he one of those learned sceptics who tell you that Nature is the only healer, and the less she is interfered with the better; but he told me that the more experience he gained the more convinced he became of the great value of drugs judiciously administered.

The students here are thoroughly instructed in medical diagnosis by an assistant professor, or, as we would call him, a clinical tutor. Dr Musser's class is ably conducted, and the teaching is on a sound anatomical basis. He was the first man whom I heard sternly interdicting the too-fast going of some of his students, telling them that when they had learned to appreciate percussion they might begin to learn auscultation.

The anatomical rooms are good, but the days are so full of lectures that the students can only dissect at night. The class of Practical Physiology was well organized, but the teacher labours under the disadvantage that the students are entirely ignorant of the use of the microscope when they come to his class. The class of gross Pathology was extremely good, Dr ——, a former pupil of Virchow's, having got together a very complete collection of specimens and demonstrating them in a very clear manner. Microscopic sections of the specimens could be examined at a side table. The physiological laboratory, though not very new, was evidently under the charge of an enthusiast in his science, but unfortunately the scarcity of positions in this branch with any adequate salary tends very much to limit the number of young men who can devote themselves to a branch which holds out, even to the most successful students, only very small remuneration.

In New York my time was so taken up with sight-seeing and the special study of intubation which I was making, that the only thing I saw in the way of a medical school was the Vanderbilt Clinique. What I did see of this convinced me that it was a very long way behind the Wiener Polyclinic, which it takes as its model. The more famous men give clinical lectures, but they do not do the work as the Viennese professors do, examining and explaining each case to the students. That work in the Vanderbilt is done by a number of young practitioners, and only picked cases go before the professors.

Harvard, which was the last school I visited in the States, claims to be superior to all the others. That she is superior to most I willingly admit; but I should never put her higher, if even on the same level, as the University of Pennsylvania. The clinical teaching is good, and has, as a rule, a sound scientific basis, while the more scientific chairs are in the hands of men who devote themselves entirely to the work in hand. The surgeons, too, see the importance of anatomy, and many of them have had quite a number of terms as demonstrators, which is by no means the rule of the States. One thing in the Massachusetts General Hospital surprised me, especially as occurring in America, viz., that there is no gynæcologist attached to the hospital. There is a beautiful little room for abdominal surgery, one side being entirely of glass and the other walls of marble, an extensive fit-out of instruments—a special gift, and not allowed to be moved—but the operations are done by the ordinary surgeons according to their term of duty. I say nothing for or against this system; but in America, the home of gynæcologists, where laparotomists are as common as blackbirds, and the number of operations simply appalling in their number, one was surprised to come across a hospital where there was not even one solitary specimen. While on this subject I may mention that the subject of "spaying" is considerably agitating the profession in the States—that is, that part of it who are not gynæcologists. It is, of course, well known that some American ladies are not fond of large, or, indeed, any families, and that consequently there is a freedom in removing the appendages which has become a serious question. The class of Clinical Medicine, under Prof. Shaddock, has one, to me, new feature. A student is given a case. Without any assistance he is supposed to take the history of this case and describe its course. This case he reads before the class, and his fellow-students then proceed to ask questions, criticise, and pick holes generally in his report. He has the right of reply, and the professor then sums up the case. The case, at my visit, was an ordinary one of typhoid, so that there was not a great deal of scope for discussion. Typhoid is extraordinarily, disgracefully common all over the States. I have seen during the last three months more cases of typhoid fever than it would be possible to see in Edinburgh in three years. In many of the general hospitals which I have visited I have seen thirty to forty cases in a morning. Diphtheria is almost equally common. In many of the mushroom towns of the West typhoid constantly rages. I do not use mushroom in the sense of mere overgrown village settlements. Large, well-known towns are equally bad. Denver City, with a population of over 100,000, seems to be a perfect hotbed of this disease. The reason is not far to seek. The town grows so fast that *there is no time to make proper drains*, and cesspools or nothing supply their place. The disposal of the sewage of a town situate in the centre of miles of flat prairie is of course a difficult matter, but it is one which must be solved in some way.

(*To be continued.*)

VII.—THE AXIS-TRACTION FORCEPS: THEIR MECHANICAL PRINCIPLES, CONSTRUCTION, AND SCOPE.

By R. Milne Murray, M.A., M.B., F.R.C.P.E., F.R.S.E., Assistant Physician, Royal Maternity and Simpson Memorial Hospital; Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh*, 11*th February* 1891.)

It is about thirteen years since Tarnier described the forceps with which his name is now universally associated, and there can be no doubt that the instrument then described marked the beginning of a new era in operative obstetrics. The difficulty which he attempted to overcome was one which had been recognised for long, and solutions, some partly successful, others entire failures, had been offered by others.

But to Tarnier belongs the credit of having applied to its solution an entirely novel principle, and one which has solved the difficulty, if not wholly, at least to a very great extent. The instrument first described, while it contained the essential principle in its construction, was faulty in detail; and his later instrument, which he seems to regard as the perfect model (at least it has remained unmodified for ten years), seems by no means an ideal piece of mechanism. I think it is open to obvious criticism in several respects, and is certainly quite unadapted for left-side midwifery; but the fact remains that Tarnier applied a *new principle*, and in great measure solved a problem which had proved a recognised difficulty for more than 100 years. His instruments and the principle they contained were met by a flood of criticism, a good deal of ridicule, and even some angry abuse. But they have stood the test of all this, and Tarnier has the satisfaction of seeing to-day the principle he so ably advocated in 1877 practically accepted by ever increasing numbers of teachers and practitioners. It is, at the same time, not a matter for surprise that obstetricians should hesitate to abandon the simple and well-tried forceps of the Smellie or Simpson type, which had stood their fathers and them in so good stead, for a new-fangled and somewhat complicated instrument of this sort. While many of them recognised only too well the mechanical inefficiency of the older forceps in many cases, they were naturally unwilling to lay aside an instrument absolutely simple, though so far admittedly defective, for one whose efficiency was obtained at the sacrifice of its simplicity.

Yet this reluctance has been overcome. The more the principle underlying its construction is considered the sounder does it appear, and the general adoption of the Tarnier instrument, or some modification of it, is only a matter of time. But while the instrument in some form or another is becoming more frequently adopted, it is a very remarkable thing that, so far as I know, neither Tarnier nor any of those who have modified the instrument have given either a definite account of the principle on which the instrument acts, nor have they given a mechanical construction of the instrument, which would enable a mechanic to construct a pair *de novo*, or to determine whether a given instrument was properly made.

Now this omission is all the more remarkable because, if the instrument has any advantage at all, it is that it approaches the character of an instrument of precision; it is certainly more so than the instruments it is meant to supersede, and yet the construction is left much to the judgment or caprice of the individual instrument-maker. Now, in an instrument involving so many curves and dimensions as an axis-traction forceps, it is obvious that the possibility of variation must be unlimited, and one has only to go the round of the makers' shops to be convinced of the unlimited differences which may be found in the examples of a single type of forceps.

As every one knows, the claim made by Tarnier is that the axis-traction forceps enables us to pull the fœtal head through the whole length of the pelvic canal in the axis of that canal; and while he points out that this may be effected through the agency of certain rods attached to the blade, he gives us no indication of the length, curvature, or intimate relationship of these rods. Precisely the same objection applies to Professor Simpson's description of his convenient adaptation of Tarnier's instrument for British practice. Yet it must be obvious to every one that the length, curvature, and other characters of the rods will determine the fact whether the instruments are *axis-traction* or not. It is quite possible to have a pair of forceps with traction-rods, and the instrument may be as far removed from being axis-traction forceps as any could well be.

I do not deny the force of the arguments advanced by Pajot, Charpentier, and others, who, while admitting the correctness of axis-traction as a principle, deny its practical applicability, in so far as it is impossible to determine with absolute accuracy the direction of the pelvic axis in any pelvis, and more especially in those cases where forceps are most necessary—namely, deformed pelves. I quite admit that there is always a certain element of possible error, but this fact all the more strengthens the demand for the mechanical construction of the instrument by as accurate and scientific a method as possible.

If we are working in a canal of doubtful curvature with an instrument whose construction is unknown, we are exposed to two sources of error. If, on the other hand, we are dealing with a canal, our knowledge of whose relations is defective, with an instrument whose construction is accurately known, we diminish the element of error by a half.

The objects I have placed before me in the paper I present to the Society to-night are:—

1. To define with accuracy, as far as possible, the principle on which the axis-traction forceps acts, and to give a definite mechanical construction of the instrument based on these principles.
2. To indicate the scope and limitations of the instrument.

I. THE PRINCIPLE OF AXIS-TRACTION FORCEPS.

It is first necessary to ask what is the problem presented to us in delivery by the forceps. The answer to this may be briefly put thus: "To draw the fœtal head through the pelvic canal with the least expenditure of force." It is quite plain that all force expended in this operation above the minimum necessary to overcome the resistance of the canals is transmitted to these canals, and will injuriously affect the mother. It then follows that the best instrument is that one which will enable us to accomplish our purpose with the least amount of force.

Now this problem (simple as its statement seems) is rendered somewhat complex by two circumstances,—1. The pelvic canal is curved; 2. The fœtal head is not a sphere, but must be regarded as an irregular ovoid or asymmetrical wedge.

A. *The Straight or Chamberlen Forceps.*

Putting aside in the meantime the second condition—the asymmetry of the fœtal head—let us consider the difficulty arising from the curvature of the canal.

Now we must bear in mind that the axis of the inlet along which the axis of the mass of the fœtal head will enter the brim is a line joining the umbilicus and coccyx, while the axis of the outlet along which the forceps must enter the pelvis is a line joining the tip of the promontory and the centre of the vulva. These lines cross each other at an angle at a point about the centre of the middle plane of the cavity; and it is obvious that if a pair of straight forceps are carried along this line they will either miss the head altogether or seize it so far back, *i.e.*, so near the promontory, as to render a firm grasp of it almost impossible.

Let us suppose, then, that the forceps are now so adjusted that the handles are brought back towards the perineum so as to stretch that structure, then the blades can be correspondingly carried forwards so as to grasp the head in such a way as to avoid slipping.

Let the line E F (Fig. 1) indicate the position occupied by the axis of the forceps. Supposing traction is now made along that line, it will be obvious by simple inspection that a certain amount of the force exerted will be spent on the pubis—in other words, only a certain amount of the force expended serves to advance the head, the remainder is dissipated in crushing the head against the pubis; and it is equally obvious that, in order that all the force expended on the forceps be effective in advancing the head, the axis of the forceps must be in the line A B, but the anatomical disposition of parts renders this impossible.

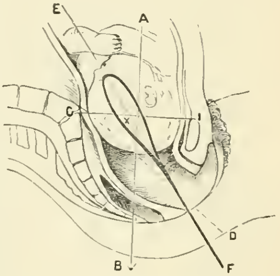


Fig. 1.—Application of Straight Forceps at Brim. C I, conjugate of brim; A B, axis of brim; C D, axis of outlet; E F, axis of forceps and line of traction; B X F, angle of error.

There is thus with the straight forceps an inevitable expenditure of ineffective force, measured in the diagram by the angle X formed between A B and E F. By a simple proof it can be further shown that the ratio of effective to ineffective force bears a distinct relation to the value of the angle B X F. Thus the effective force is as the cosine of X, while the ineffective force is as the sine of X.

Accordingly, so long as the angle at X exists—in other words, so long as the line A B and E F do not coincide—a certain amount of the force expended in traction will be ineffective. This amount will be measured by sine X. Now, the smaller X becomes (or the more E F approaches A B) the further will the value sine X recede from unity, while at the same time the more will cos. X, the measure of the effective force, approach unity. When the lines A B and E F coincide, X of course disappears, and the total force becomes effective. The efficiency of the forceps used as a tractor will thus be measured by the angle X, and will be inversely proportional to sine X, and directly proportional to cos. X. But it is perfectly obvious that with straight forceps E F can never coincide with A B, so that the angle at X always exists.

The first and essential error of the straight forceps then is, that some of the force applied in traction is expended on the tissues of the mother, and not in advancing the child's head.

But now we must consider the relations of the forceps to the fœtal head.

The fœtal head is not a perfect sphere. Looked at from above it is an ovoid, its major axis A B (Fig. 2) antero-posterior, its minor C D transverse, but somewhat behind its middle diameter. Looked at from the side, it presents the appearance of a truncated asymmetrical wedge. The posterior end O (Fig. 3) abrupt and steep, the anterior F flat and sloping. According to Lahs' view, it is this conformation of the fœtal head that permits the more rapid descent of O through the girdle of resistance, which descent effects the introduction of the short sub-occipito-bregmatic diameter into the pelvic inlet. However this attitude of the head is brought about, it is, of course, of essential importance in the mechanism of labour, substituting as it does the sub-occipito-bregmatic for the occipito-frontal diameter, a difference of $1\frac{1}{2}$ in. or thereby. Thus, in a typical L.O.A. case, we may say that the plane formed by the expansion of the sub-occipito-bregmatic diameter enters the brim parallel with the plane of the brim.

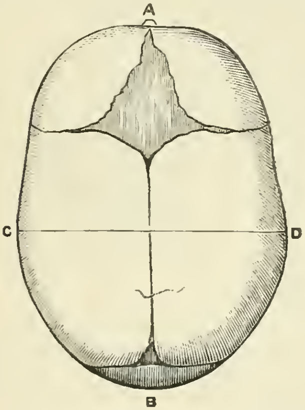


FIG. 2.—Fœtal Head seen from above. A B, occipito-frontal diameter = major axis; C D. biparietal diameter = minor axis.

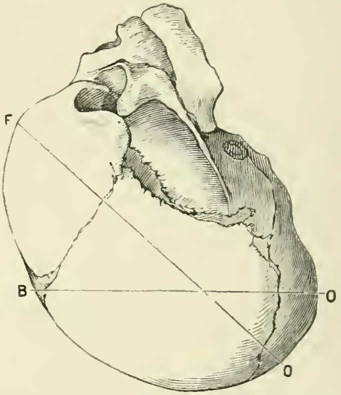


FIG. 3.—Fœtal Skull as it enters the Brim. F O, fronto-occipital diameter; B O, sub-occipito-bregmatic diameter.

Now, a glance at the relation of the line E F to the fœtal head at the brim will show that on account of the blades grasping the head too near the sinciput the inevitable result of traction must be to depress the sinciput, the occiput forming a pivot on the anterior pelvic wall. Now, were the head a sphere, this would not be of any consequence, because all diameters of a sphere are equal; but with the fœtal head it is different, because its immediate effect is to drag down the sinciput and replace the sub-occipito-bregmatic by the occipito-frontal, and so undo "flexion."

Now this is a point of most essential importance in relation to the action of *straight* forceps, and is not quite sufficiently insisted on in our books, because it is really the one point in which straight forceps fail as compared with the curved. Being incapable of taking a mesial or symmetrical grasp of the head, they drag down the sinciput, and so naturally increase the difficulty by dragging in the larger diameter.

This fact is further borne out if we consider their action in the treatment of occipito-posterior cases. It is assumed by those who advocate the straight forceps that they are specially useful in these cases, and this claim chiefly rests on the ease with which they permit internal rotation. I do not deny their advantage in this respect; but it is probably of much more consequence that in posterior cases they, in virtue of their inherent defect in relation to anterior cases, grasp the occipital end of the head (which is now posterior), and so pull it down, tending thereby to increase flexion and favour the mechanism natural to such cases. No doubt the absence of the pelvic curve is of advantage in expediting internal rotation, the forceps requiring no re-application after the process is complete, but their chief advantage lies in the direction I have indicated.

It follows, then, that the faults of the straight forceps are—(1), *Faulty direction of traction*; (2), *Unsymmetrical grasp of the fœtal head, tending to substitute the O.F. diameter for the s.O.B. diameter*, i.e., "*to undo flexion.*"

B. *The Curved or Smellie Forceps.*

Let us now consider the advantage to be obtained from the addition of the pelvic curve to the forceps. Here, as in the straight instrument, the line E F (Fig. 4) represents the direction of the handle and shank, but the blade now lies in the line A B. By this means we obtain a grasp of the head which is symmetrical to its mass. In other words, when traction is made on the instrument, having such a grip, the relation of the anterior to the posterior end of the head is not altered. The traction *a fronte* being symmetrically distributed on the head, just as Lahs has shown the pressure *a tergo* is in normal labour, the contour

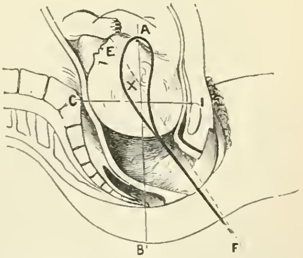


Fig. 4.—Application of Curved Forceps at Brim. C I, conjugate of brim; A B. axis of inlet; E F, axis of forceps and line of traction; B X F, angle of error.

of the head determines the relative depression of the occiput as compared with the sinciput during advance; and traction by means of this forceps, whatever the direction may be, tends in no way to interfere with the entrance and descent of the head by the sub-occipito-bregmatic diameter. This is obviously an enormous gain, and at once eliminates a primary defect of the straight forceps. The curved forceps then enables us to effect delivery with the fœtal head mass in the most favourable diameters.

But having stated this, we have stated the whole mechanical advantage it possesses over the straight forceps, for the direction of its traction is just as defective as that of the straight instrument.

The line of traction will be represented by the line passing through the shanks and handle E F. This line, again, meets the axis of the inlet at an angle whose cosine measures the effective force, and whose sine measures the ineffective. It is thus plain that the advantage of the curved forceps over the straight, when employed in simple and direct traction, consists solely in the fact that it avoids displacing the most favourable diameter of the child's head for a less favourable one, and that it has the disadvantage of faulty direction of traction to the same extent as the straight instrument.

The faulty direction of traction of the Smellie forceps has, of course, been recognised for many years; and with the view of obviating the loss of power to some extent, various devices in employing them have been made by different obstetricians. I shall only refer to two of them, because they are the types under which all the others may be classified. Many of the devices have been claimed as prior applications of Tarnier's principle, but this is quite unjustified, as can be readily understood on considering the principles involved. The first of the devices is that known as "Pajot's manœuvre" (Fig. 5). This is performed with the well-curved, long-handled Levret forceps, both of which characters are essential in the instrument employed for this purpose.

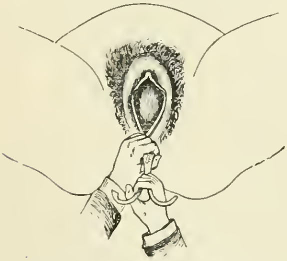


FIG. 5.—"Pajot's Manœuvre."

Suppose the head is at the brim and the well-curved Levret forceps applied, the blades will grasp the head in or at least parallel with the axis of the brim. The handle forming an obtuse angle will be somewhat behind the axis of the outlet. By grasping the lock in the left hand, which acts as a sliding fulcrum, while the handles are carried upwards towards the abdomen, the blades are made to descend downwards and backwards in the axis of the inlet, and in this way the head is dragged into the cavity approximately along that axis. This pivotting action of the instrument must at the same time be combined with traction, so that a complex movement of the hands and instrument is necessary. The left hand is not a fixed fulcrum, but must move downwards and backwards at a rate corresponding with the advance of the head.

Now it is quite obvious that the success of the operation depends entirely upon the adjustment of the amount and direction of the forces contributed by the two hands. The resultant of these two forces ought to move the head in the axis of the pelvis for the time being. But as we can see neither the head nor the pelvis, it is obvious that the adjustment of the two powers is a matter of skilled judgment. Further, as the head advances, the direction of the canal is continually altering, and it is obvious that the accurate adjustment becomes a matter of increasing difficulty, and, indeed, practically impossible. Precisely the same objection applies to the second type of device, of which the instrument of Hermann is an example. This instrument has, by more than one writer, been placed in competition with Tarnier in the claim for priority. But as a matter of fact, it is simply a mechanical appliance for facilitating Pajot's manœuvre, and has nothing in common with Tarnier's.

In Hermann's instrument (Fig. 6) a second pair of handles (straight), attached by a link joint to the blade, are held in the left hand, while the handles proper are held in the right. It is easy to see, without any special demonstration, that a movement of the blade in any desired direction could be obtained as a resultant of component forces acting on B and A. But the difficulty again arises, in what direction to apply this resultant force; in other words, how are the components to be adjusted?

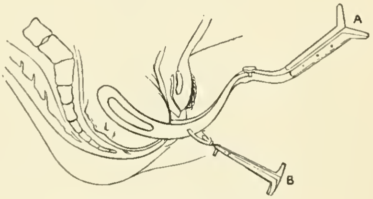


Fig. 6.—Hermann's Forceps.

A moment's consideration will show that Hermann's instrument is thus simply a mechanical elaboration of Pajot's principle—has the same advantages and the same defects.

To this class belongs, too, the instrument shown and described to the Society by Dr Foulis. The difference of Hermann and Foulis' instrument is simply this—that in the latter the second traction handle is attached by a rigid attachment, and in Hermann's by a link. The rigid attachment in Foulis' instrument probably gives an easier method of adjusting the component elements, but the difficulty of fixing the direction of the resultant remains precisely the same.

We thus see that the curved forceps, used as a simple tractor, while grasping the fœtal head at the best advantage, transmits the force to the head at a loss, and that the devices suggested to remedy this so far are unsatisfactory, in so far as they demand the skilled judgment of the operator to employ them.

C. *The Axis-Traction or Tarnier Forceps.*

There can be no doubt that to Hubert of Louvain is due the credit of giving the first practical suggestion of the solution of the axis-traction difficulty; and imperfect as his instrument is, it contains the germ of the later appliance. Hubert solved the problem, so far as the brim of a normally pitched pelvis is concerned, by simply adding a rigid bar, which projected at right angles to the shanks of the forceps to a distance such that a line joining the umbilicus and coccyx, *i.e.*, the axis of the brim, passed through it (Fig. 7). By making traction on this bar only in this line, which can be always determined with practical accuracy, the head will be dragged into the brim in a line corresponding to the axis of the inlet. Thus, so far as the brim is concerned, the problem is solved. The curved blades grasp the head at the best advantage, and the rigid traction bar applies the tractive force in such a way that the angle X (Figs. 1 and 4) disappears (Fig. 8). Thus the head enters the brim in the proper axis, and the forceps up to this point are axis-traction (Fig. 8). But now the head is in the cavity, the direction of the axis immediately begins to alter, but we are still dragging in the axis of the brim, hence we are no longer applying the traction to the best advantage. The instrument now ceases to be an axis-traction forceps, and re-adjustment of the line of traction is necessary. But how is this to be done? The instrument offers no guide or hint, and again we have to fall back on individual judgment. Thus, theoretically perfect as an axis-traction instrument as this is at the brim, it loses all claim to this at a lower level.

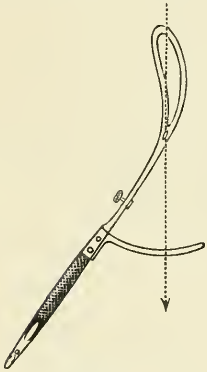


Fig. 7.—Hubert's Forceps. The arrow shows direction of traction.

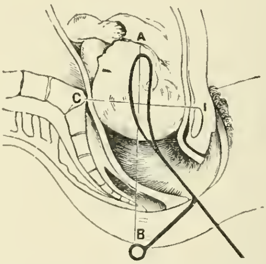


Fig. 8.—Hubert's Forceps applied at the Brim. A B, the axis of the inlet corresponds with the direction of traction, hence angle of error has disappeared.

In 1877 Tarnier first announced the construction of his new forceps, but it was four years later when the permanent or improved pattern was described. His invention consists in the application of suitably curved traction rods to the back of the blades by a joint, allowing antero-posterior movement (Fig. 9). These rods are exclusively used for traction, the ordinary handles being only employed for applying the instrument. The advantages claimed for such an instrument are:—1. The head is caught in the best attitude; 2. The movable traction rods allow of traction in the axis of the inlet; 3. As the head descends into the cavity, the application-handles of the forceps move forward in such a way as to indicate how the traction-rods are to be re-adjusted, in order to continue the traction in the direction proper to the plane of the pelvis through which the head is passing.

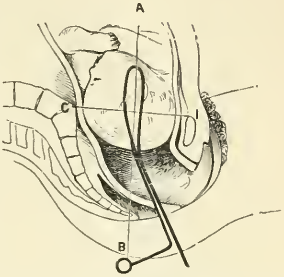


Fig. 9.—Diagram of Tarnier's Forceps at Brim. The traction-bar of Hubert's instrument is continued up by a rod which is fixed by a movable joint at the lower end of blade.

Or, put briefly, we have with the Tarnier instrument:—A, a proper grasp; B, a means of traction in the pelvic axis; C, a means of indication as to the axis of the pelvis wherever the head may be. It is of importance to analyse these claims, and see how far they can be conceded to the instrument under discussion.

A. *As to the Proper Grasp.*—The blades being curved, they come under the same conditions as the ordinary curved forceps. These, as we have seen, give us the means of seizing the fœtal head to the best advantage, and in this respect Tarnier's instrument possesses the same advantage as the ordinary form. The entrance and descent of the head by the most favourable diameter are in no way interfered with.

B. *As to the Means of Proper Traction.*—This involves a study of the proper dimensions, curvature, and attachments of the traction-rods. So far as I am aware, this has not been discussed by Tarnier or any of those who have modified his instrument. Yet it is obviously a matter of vital consequence to the construction and efficiency of the instrument; and one has only to look for a moment at the instruments supplied by different makers—say of the Simpson-Tarnier model—to see the possibility of error and variation. Let us then consider the mechanical principle involved in the construction and attachment of the traction-rods.

1. Let us suppose we have a head about to enter the brim, and suppose we apply a pair of forceps whose blades, instead of being curved (like the ordinary instruments), are bent sharply at an angle. The line P V (Fig. 10) will represent the axis of such blades, while P R will represent the axis of the shanks and handle.

2. Let A B represent the axis of the inlet, which will also indicate the line on which traction must be made with the head at the brim. It follows, then, that the handle of the rods by which traction is made must be on the line A B, outside the pelvis. As

the anatomical arrangement of parts renders the adaptation of a straight traction-rod along it impossible, we must adopt a modified shape of rod. Let the said rod spring from the angle P, run close to and parallel with the shanks P R, and then at a suitable distance, say S, curve backward until it crosses the line A B. At this intersection the handle T must be fixed. With such a construction it is certain, so long as the rods P S and P R remain parallel, that traction will be in the line A B, just as if the rod were a straight one from A to B.

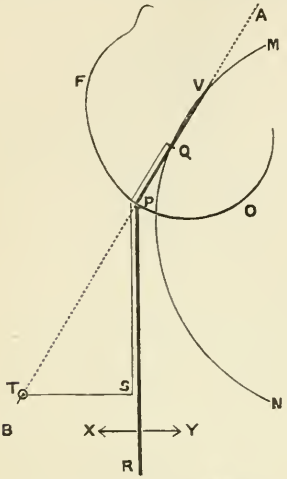


Fig. 10.—F O, fœtal head; M N, curve described by middle point of fœtal head as it passes along canal; P V, blade of forceps; P R, application handle; Q P S T, traction-rod; A B, line along which traction on T tends to draw fœtal head.

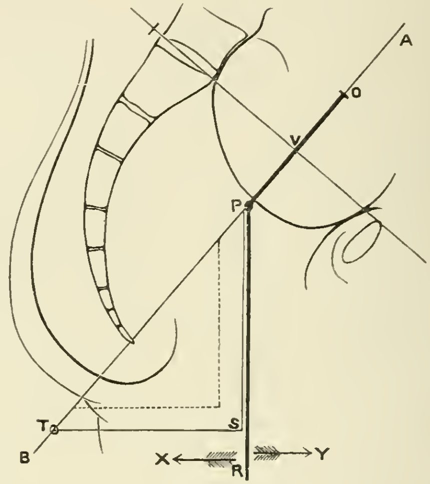


Fig. 11.

This may not appear obvious at first, but a mechanical illustration will make it clear. Suppose T P S (Fig. 11) is a steel plate fixed by a link at P, and traction is made at T along A B, then the mere cutting out of a section of T S P along the dotted line will make no difference to the direction of the transmission of force from T if the remainder remains rigid.

3. Now, if the junction of the traction-rod at P is made rigid, we have simply the construction of Hubert's forceps; and as soon as we have cleared the brim, since traction should no longer be in the line A B, we have no means of knowing in what way we must now direct it.

4. But suppose the junction at P is made by a joint which permits of antero-posterior movements, the case is different. For now, as the advancing head enters the cavity the blades of the forceps will be under the influence of two forces.

a. Supposing the blades are so firmly applied as to be immovable on the head, they will be carried along the curved axis with the head, and the handles will tend to move forwards in the direction of the arrow Y, and thus indicate a change in the line of movement of the head.

b. But this movement of the blades and handles will be modified in amount by their being acted on by another force at the point P in the direction A B, assuming traction is still kept up in this direction. But this will not annul the influence of the first, so that a certain movement of the handles P R away from the rod P S will indicate that a change in the direction of descent has occurred, necessitating a change in the direction of traction. By now bringing the traction-rod P S T up to the handle P R until close to it, we are again in a position to apply the tractive force in the direction appropriate to the new position of the head relative to the pelvic curve.

5. But it is obvious that unless the blades grasp the head with considerable firmness, the force in the line A B will greatly tend to annul the directive influence of the head on the handles, tending to displace the lower end of the blade backwards round an axis piercing the tips of the blades,—it will tend, in fact, to displace the blades on the head.

6. But now, let us shift the hinge of the traction-rod to the middle of the blade Q (Fig. 10), bending the rod along the lower half of the blade. Traction at T will still act along A B, but this traction will have no tendency to interfere in any way with the directive influence of the head upon the blades and handles of the forceps.

Accordingly, with the rods hinged at Q, the application handles will act as a most sensitive index of the movements of the head in descending the pelvis, while at the same time indicating the direction of proper traction. This is, of course, a point of vital importance in the theory of the instrument, and it may be well to discuss it a little more fully.

Let F O (Fig. 10) represent the fœtal head, and M N the curve along which it will travel under the influence of the pelvic curvature during delivery by the forceps. Now let us suppose that the traction-rod T S is attached, 1st, at P. Then as the head descends along M N the traction applied at T along A B will tend to displace the blade P V on the head backwards. For as the pelvic walls will guide the head along M N, the traction at T will tend to keep the blades P V in the line A B. There is thus an inevitable tendency for the traction-rod so placed to cause rotation of the forceps on the head, so that the handles will tend to move in the direction of the arrow at X. In this way, as has been already indicated, the attachment of the rods at P tends to diminish the sensitivity of the instrument as an index of the movements of the head in the pelvis. Now, 2nd, suppose the rods shifted up until attached to the tips of the blades at V. It will be seen that the condition of things is altered, for now traction at T along A B to V will be followed by a tendency to tilting forward on the part of the blade V P, and a corresponding movement of the handle R in the direction of the arrow Y. The influence of the head in carrying the blades and handle forward will be greatly increased, and out of all proportion to the effect of the pelvic curvature. Obviously, then, the attachment of the rods at either P or V would be a faulty construction,—at the former the sensitivity of the handles as an index would be impaired, while at the latter the whole system would be obviously highly unstable, and there would be a tendency to exaggerate the influence of the pelvic curve. It follows, then, that there must be a point somewhere between P and V, at which the tendency of the traction-rods to interfere with the directing influence of the movement of the head on the handle of the forceps is *nil;* and that point must be one half-way between P and V, namely, Q, the point of the blade which lies against the centre of the mass of the fœtal head. It will be readily seen that when the traction-rods are hinged at Q, the slightest change in the direction of the movement of the head will make itself evident by the handles of the instrument R tending to move forward away from the traction-rod T S.

It follows, then, that for a theoretical arrangement such as this, —the blade of the instrument forming an obtuse angle with the handle, and being itself straight,—the maximum sensitivity will be obtained by attaching the traction-rod to the centre of the blade. But an instrument with the blade P V straight as in the figure is obviously impracticable. It remains to be seen, then, how we can construct an instrument in which the blade P V has a curve, as in the ordinary forceps, provided with traction-rods of proper construction, and attached at the point which will permit of the maximum efficiency of the instrument as a tractor and indicator being secured.

Let the outline (Fig. 12) be a pair of curved forceps to which traction-rods have to be attached. Let Y be the point at which the curve of the blade joins the straight shank. Join the points X and Y (X being the centre point of the end of the blade). Bisect the chord X Y by a perpendicular E F. Describe a circle G X V Y H whose centre lies on E F, and whose periphery will pass through X and Y. Now draw a tangent A B to the circle G X V Y H at the point V, *i.e.*, where E F intersects it.

The conditions required, namely, maximum sensitivity and accuracy of direction, will be met if the traction-rod is attached to the blade at the point V, and the rod has such a curve that the handle lies on the line A B.

If the rods are attached at the point V in X V Y, it is obvious that the force will be distributed symmetrically to the blade, and that the tendency to produce rotation of the blades on the head is zero. In other words, the point V corresponds to the point Q in

Fig. 10. The movements of the application handles will accordingly be determined entirely by the change in direction of the head.

Unfortunately for the mechanical accuracy of this construction, the point V occurs in the centre of the fenestrum. Poullet and others have attempted to get over this difficulty by attaching the traction-rods to a bar crossing the fenestrum, and fixing the pivot there. The objectionable nature of this arrangement is obvious when we consider the use of the fenestrum. This bar adds a dangerous edge to the instrument, and might readily do much damage to nose, ear, etc.

But the disadvantage is not so great as it seems at first. The chord of the curve is 5·75 in. in ordinary forceps, and the position of V should theoretically be 2·87 in. from the lower end. The construction of A. R. Simpson's instrument allows it to be only 1·8 in. from the lower end. This fact no doubt diminishes the sensitivity of the instrument as an indicator of the direction of traction, but only to a certain extent. That is to say, the point of insertion Z of the rods is sufficiently near the centre of equilibrium to permit the head to exercise far more directive force on the handles than the rods can, and this is practically all we want.

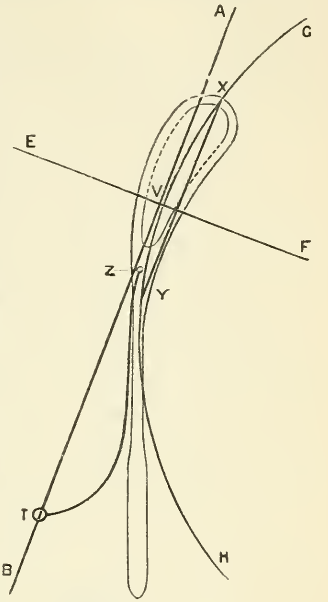


Fig. 12.—Mechanical construction of Tarnier's Forceps. X, centre point of blade tip; Y, junction of blade and shank; X Y, chord of arc of blade; X V Y, arc of blade; E F, bisects chord at right angles; G X V Y H, circle whose centre is on E F, and of which X V Y is an arc; A B, tangent to arc at V; V, theoretical position for attachment of traction-rods; Z, best practicable position for do.; Z T, traction-rod.

Now, as to direction of traction, it will be seen from the diagram that the fenestrum involves us in a slight difficulty too. But the defect here is even more insignificant than in relation to directiveness.

It will be seen that the tangent A B passes a little behind the stud of the traction-rod hinge Z, but the distance is so small as to make no appreciable difference in the direction. Were it desirable to obtain perfection in the matter, it could be obtained by broadening the lower part of the blade to take the stud a little further back.[1]

It will be well now to recapitulate the points to be attended to in the construction of a pair of axis-traction forceps on the Tarnier principle.

1. The forceps must be of the Levret or Smellie type, *i.e.*, with straight handles and shanks, and a well-defined "pelvic curve."

[1] This will be better seen in the diagram at the end of this paper.

2. The fenestrum should be of such a shape and size as to leave a considerable part of the blade solid at its junction with the shanks.

3. The traction-rods must be united with a joint permitting of free antero-posterior movement only.

4. The upper part of the traction-rods must fit as close as possible behind the shanks and handle so as to save room, and avoid stretching of the tissues at the perineum.

5. The traction-rods must curve back for the attachment to the traction handle, so that when the rods lie close to the shanks, a line joining the traction-bar and the pivot will form a tangent to the middle point of the arc of the curve of the blades.

6. The traction-rod hinge must be attached to the blade as near the centre of it as the fenestrum will permit.

These may be regarded, I think, as the essential mechanical principles of this important instrument, and I wish now to ask attention to the manner in which I have attempted to carry these out in the instrument I have brought before the Society this evening, and in doing so I shall at the same time draw attention to some other matters of less vital importance, but which, I think, tend to add to its efficiency as an obstetric instrument.

The instrument is a modification of the Simpson-Tarnier model, which has, I think, many advantages over the French instrument. Lightness, compactness, and suitability to the left position are not its least advantages.

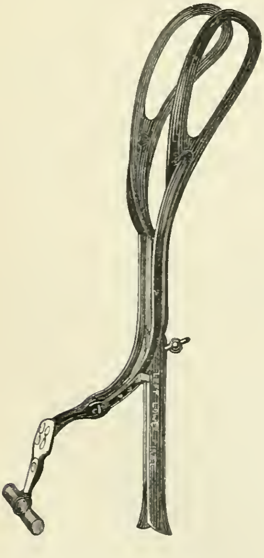


Fig. 13.—Author's pattern of Axis-Traction Forceps.

My instrument (Fig. 13) is made entirely of steel, there are no wooden handles —even the traction-bar is made of metal. The advantage of getting rid of the wooden handle is considerable.

1. The application handle being no longer used for traction, the massive handle of the Smellie forceps, so important in giving a good hold, is of no further use.

2. If any one who has used a pair of ordinary handled forceps for a year or two will take the trouble to unfasten the wood from the metal plate, he will find between the surfaces a much more potent argument than I can give in words for abandoning them. Owing to the wetting of the handles in cleaning the instrument, and the expansion of the metal plate in heating, a space is ultimately formed between the two, which is a receptacle for filth, putrid blood, grease, etc.,—a museum of septic matter.

The application handles are made smooth and light, and 6 in. in length. The ordinary Smellie lock is used, and the shanks are straight, strong, $2\frac{1}{2}$ in. in length, and ·75 in. between their inner surfaces. The blades are 5·75 in. in length, measured along the chord of the pelvic curve (this arc has a radius of 7 in.) The termination of the arc joins the shanks, so that the axis of the instrument and the chord form an angle of 120°. The solid part of the blade measures $1\frac{3}{4}$ in. The fenestrum is 4 in. in length. The blades are kept in position by a fixation screw of the ordinary pattern, the butterfly nut being prevented from coming off by a pin driven through the upper thread of the screw. The traction-rods are hinged to the blades. They lie on the outside of the solid part of the blade, against which they fit snugly. They are fixed by a pivot, which pierces the blade at right angles to their length. This pivot is held by a small screw nut which fits flush into a countersink in the inner side of the blade. It is of importance that this nut be screwed down to a shoulder on the pivot and work free of the countersink, otherwise the to-and-fro motion of the rods will inevitably loosen it and lead to inconvenience, and even disaster, if it come off inside the pelvis. The hinge of the traction-rods is 1·4 in. below its theoretical point, and ·1 in. in front of the tangential line.

From these figures its error can be calculated. From their attachment the rods curve round the blades, and are bent at an angle so as to lie straight beside and a little to the outside of the shanks. One inch below the lock they are bent by an easy curve backwards, and terminate in two flattened surfaces, in which are inserted the traction-handle studs. About half way along the back curve is the traction-rod lock. This appliance (which formed a part of the model I described to the Society in 1881) is, I think, a device of some importance. It consists (Fig. 14) of a pin fixed to the lower traction-rod which enters a mortise on the upper, in which it is held by a simple bolt. Its object is to bind the two rods into one system, and make sure that the force of traction is equally distributed on the two blades.

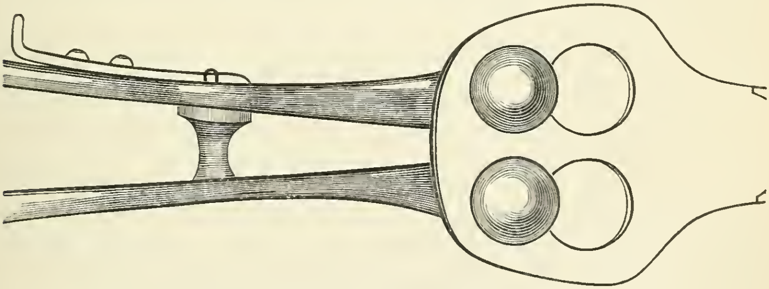


Fig. 14.—Traction-rod Lock, and Traction-bar Plate.

The inclination of the flattened surfaces terminating the rods and carrying the traction-bar studs is a matter of essential importance. Its inclination must be such that the traction-bar plate when attached must be absolutely in the tangential line of the curve when the rods are touching the shanks. This is the part of the instrument which is most likely to be bungled by makers, and it is one which, when faulty, vitiates the whole mechanism of the instrument. The angular measurements are of little use to makers, and there is nothing for it but to try each pair of instruments with the projection, and adjust the curve until it coincides.

The distance of the studs from the centre of the handles in these instruments is 3·5 in. The studs are square in section, with large heads. The traction-bar plate is attached by a couple of keyholes, and when drawn down should fit firmly without to-and-fro motion of any sort, and this is a detail which makers require much persuasion to carry out. The traction-handle possesses a hinge joint giving lateral motion, and the bar is attached by a swivel.

(*To be continued.*)

Part Second.

REVIEWS.

De la Tuberculose Mammaire. Par le Dr ADRIEN-W. ROUX, Assistant interne à la Clinique chirurgicale de l'Hôpital cantonal de Genève. Geneva: Henri Stapelmohr: 1891.

THIS work contains, in a very readable form, a systematic account of mammary tuberculosis, with a list of all the cases which have hitherto been published. The author's experience is based upon three cases admitted to the hospital at Geneva. It will interest the readers of the Journal if we give a *résumé* of some of the author's conclusions. Although the disease is referred to by Sir Astley Cooper in his work on the Breast, published in 1836, it remained comparatively little known until the demonstration of the bacilli and the results of experimental inoculations in 1882 made its recognition a certainty. No more satisfactory explanation is forthcoming of the rarity of breast tubercle than that the organ has usually a small blood-supply. The male breast was affected in two cases out of a total of thirty-four. Women are most subject during the period of active sexual life, especially at puberty, and during pregnancy and lactation. According to the author's statements, there appears to be a great risk of infecting the child through the milk should the breast become tubercular during lactation. The disease is most commonly secondary to tubercle elsewhere, as is the case in other forms of surgical tubercle. More rarely it is the result of extension from tubercle in the thoracic wall (*e.g.*, sternum, ribs, pleura). A primary infection from the nipple through the ducts is regarded as possible. Tubercular growth first commences in the interacinous connective tissue, while the acini and ducts are involved secondarily. The histological changes are similar to those observed in other organs. The giant cells are regarded by the author as representing the remains of acini or ducts which have been surrounded and invaded by the tubercular infiltration. The disease shows itself anatomically and clinically under three types,—(1.) The "cold abscess," which does not differ from the same lesion in other parts of the body; its seat is usually in the substance of the breast, and in the early stage it is therefore liable to be mistaken for cysts, cystic disease, and the softer varieties of tumour. (2.) The disseminated tubercle, in which there are circumscribed minute nodules, with caseous centres and fibrous margins, scattered throughout the breast, usually of slow growth and progress. This variety causes little or no enlargement of the organ, and it requires to be carefully distinguished from chronic interstitial mastitis, or, as it is commonly called, chronic lobular inflammation of the mamma. (3.) The confluent tubercle is at the same time the commonest and most characteristic type of the disease. The breast becomes irregularly enlarged, and presents on palpation a solid induration in its substance, surrounded by smaller nodules; the nipple becomes retracted as a result of the fibrous induration of the surrounding breast tissue, while around it there are formed, sooner or later, a number of characteristic fistulous openings or sinuses derived from the caseous necrosis and disintegration of the central mass. In the early stages of this form, the diagnosis has to be made with considerable caution from the various solid tumours of the breast. In all the three forms we have indicated the axillary glands are early infected, and from the more rapid progress which the tubercle may attain in the glands, the disease in the latter has often been erroneously assumed to be primary, while that in the breast has been overlooked altogether. The prognosis and treatment of mammary tubercle are governed by laws similar to those which hold for tubercle in general. The three plates which accompany the paper illustrate some of the appearances to which we have alluded.

A Text-Book of the Diseases of the Ear. By Dr JOSEF GRUBER, Professor of Otology in the Imperial Royal University of Vienna. Translated from the Second German Edition by special permission of the Author, and edited by EDWARD LAW, M.D., C.M. Edin., M.R.C.S. Eng., and COLEMAN JEWELL, M.B. Lond., M.R.C.S. Eng. London: H. K. Lewis: 1890.

TWENTY years ago the study and practice of diseases of the ear was in an embryonic stage, and in even comparatively recent years, to the general practitioner, the ear represented an almost unknown land—the "Darkest Africa" of Medicine. This specialty may now, however, justly claim a position among the scientific branches of Medicine, and the volume which is now before us is well fitted to show the immense advances that have been made both in theory and in practice. Among those pioneers who, by their untiring zeal and energy, have rescued this subject from its former position of obscurity, we must place, well to the front, the name of Josef Gruber, who in many ways has contributed so largely to this result.

The book to which we refer is a translation by Drs Law and Jewell, both of whom are connected with the London Throat and Ear Hospital, from the second German edition of Gruber's *Text-Book on Diseases of the Ear.* The original work has established a reputation both on the Continent and in this country as a work of great merit, and is widely known and read; the appearance, therefore, of a translation of the second edition, brought well up to date, is a most welcome addition to the books on the ear available to the English reader. The increase in our knowledge, the greater accuracy with which diseases of the ear can now be diagnosed and treated, and the extent of the literature of the subject, is in some measure indicated by the size of this work, which contains nearly 600 royal 8vo pages.

An accurate anatomical knowledge, as the author states in his preface, is the only sure foundation on which successfully to cultivate a real knowledge of this subject, and hence the first part of the book is devoted to a minute description of the anatomy and physiology of the organ of hearing. While it is always difficult to make anatomical detail appear interesting, it is equally difficult to make its description clear and intelligible. In the latter respect the author has been quite successful, but we fear the beginner will feel inclined to proceed no further when he meets at the outset forty pages given up to the anatomy of the temporal bone.

The descriptions of the various methods of examination, the different instruments required to carry out these methods, and the general therapeutics of the ear, occupy the next or general part of the book.

We come now to the third or special part of the book, which will probably attract the greatest amount of interest on the part of the reader, and which undoubtedly bears in a greater degree the stamp of the author's personality. Subdivided into sections for the consideration of diseases of the external, middle, and internal ear, it is written in a clear and lucid style, conveying, in the most comprehensive manner, all the information that the reader can desire to assist him in understanding the methods of diagnosis and treatment. A number of woodcuts, excellent, if perhaps we except some of the anatomical ones, help the reader to take a practical view of the subject. The author's own views are stated with precision and with confidence, and he draws largely from his wide experience for many illustrative cases. He quotes largely from the writings of others, and it is an advantage to have contrasted, side by side, the views held by many other authorities.

The subject of "certain operations on the membrana tympani and the structures of the tympanic cavity" occupies a separate chapter, and is of special interest, because many of these operations are more in vogue on the Continent than in this country, and because Gruber is an advocate of one of them, the section of the tendon of the tensor tympani in certain cases of chronic middle ear disease.

At the beginning of the book will be found two plates containing seventy coloured representations of the morbid appearances of the tympanum, which form an excellent atlas. A table of their contents is given on page xix., but for any actual description of the drawings it is necessary to refer to the text of the book. This is a distinct defect, and the value of the plates for reference purposes would be much enhanced by a short description of the figures placed side by side with them.

The translators deserve every credit for the successful manner in which they have completed their arduous task, and for the careful way in which they rendered Gruber's meaning, and also for some useful additions tending to increase the value of the work to the English reader.

The book will take the foremost place as a work of reference, and while, perhaps, too bulky and too advanced to meet the requirements of the junior student, it should certainly find a place in the library of every specialist. As a work of reference, however, it has a serious defect in not having a full enough index. For example, if we turn up the symptom tinnitus we find ourselves referred to twenty-two different parts of the book. At first sight it would appear that tumours of the auricle have been entirely omitted, for neither in the index nor in the table of contents do we find them mentioned; however, on perusal, we find that they are discussed along with new formations of the external auditory canal.

While the translators have done their work exceedingly well, the publishers have not been behind them. The printing and paper are good, and the external appearance of the volume is, in this case, quite in keeping with the excellence of its contents.

The Surgeon's Pocket-Book. By Surgeon-Major PORTER and Brigade-Surgeon GODWIN. London: Charles Griffin & Co.: 1891.

THIS work is the companion volume to the well-known *Surgical Handbook* by Messrs Caird and Cathcart, and was originally written as a competitive essay for the prize given by the late Empress of Germany for the best manual on the practical treatment of the wounded in war. In its present form it is specially intended to be used by those holding commissions in the public medical services. The fourth edition, now before us, has been carefully revised and brought up to date by Dr Godwin. While we fully appreciate the labours of the editor in the completion of this difficult task, we believe that the book would be greatly improved by the omission of a great number of the extracts from surgical papers and text-books, many of the teachings of which have been rendered obsolete by recent advances in pathological knowledge.

Materia Medica and Therapeutics, with Special Reference to the Clinical Application of Drugs. By JOHN V. SHOEMAKER, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics, and Clinical Medicine, College of Philadelphia, etc. Vol. II. Philadelphia and London: F. A. Davis: 1891.

IN a previous number we had occasion to speak favourably of the first volume, and we congratulate Prof. Shoemaker on the successful completion of his great work on Materia Medica. After an able introduction on the classification of drugs, the author devotes the rest of the book to a discussion of the physical properties, doses, physiological actions, and therapeutic uses of the various officinal and unofficinal drugs. Prof. Shoemaker has long been known as an able writer and a successful teacher, and this work is a valuable addition to the many works on Materia Medica. It is too large for a student's text-book, but is an excellent work of reference; and the various drugs being arranged alphabetically, renders it very suitable for consultation.

Materia Medica and Therapeutics: an Introduction to the Rational Treatment of Disease. By J. MITCHELL BRUCE, M.A., M.D., etc. Nineteenth Thousand. London, Paris, and Melbourne: Cassell & Company: 1891.

THE fact that this popular manual has reached its nineteenth thousand shows that it is still a favourite manual with students. The present edition contains the additions made to the B. P. in 1890. It is an excellent manual, but might be greatly improved if the author would pay more attention to the Natural Orders of plants as given by the ablest botanical writers of the present day.

Kemp & Co.'s Prescriber's Pharmacopœia: a Synopsis of the more Recent Remedies, Official and Unofficial, with a Therapeutic Index and a Résumé of the B. P. Additions, 1890. By a Member of the Pharmaceutical Society of Great Britain. Second Edition. Bombay: Kemp & Co.: 1891.

WE are glad to see that this work has reached a second edition.

The work is of a convenient size, neatly got up, well arranged, and contains much valuable information on the many medicines recently introduced to the notice of the profession.

The Modern Antipyretics: Their Action in Health and Disease. By Isaac Ott, M.D. Easton, Pa.: E. D. Vogel: 1891.

Dr Ott has had constructed what he calls a "human calorimeter," in which he has made careful experiments to measure the variations of temperature of the body. The results are recorded in this small volume. The subjects treated of are—1. Fever; 2. Chemistry; 3. Physiological and Pathological Action; 4. Therapeutics and Value of Antithermics in Typhoid Fever. The book will be read with interest and profit by all.

Materia Medica: Catechism Series. Part II. Edinburgh: E. & S. Livingstone: 1891.

We had occasion to express our opinion of Part I. in a previous number, and certainly Part II. is much more accurate than Part I.; but it is a book which never can "be a great and useful means of self-tuition," and is calculated to injure the student by making him believe that this book "will enable him to run over the work the night before the examination."

The New Sydenham Society's Lexicon of Medicine and the Allied Sciences (Based on Mayne's Lexicon). By Henry Power, M.B. and Leonard W. Sedgwick, M.D. Seventeenth Part—Mas—Mit. London: The New Sydenham Society: 1891.

This part well maintains the excellent character of this *Lexicon.*

Supplement to a Text-Book of Pharmacology, Therapeutics, and Materia Medica. By T. Lauder Brunton, M.D., D.Sc., LL.D., F.R.S., etc. London and New York: Macmillan & Co.: 1891.

This supplement contains the additions (1891) to the British Pharmacopœia, and is worthy of the high reputation of the author.

Synopsis of Practical Chemistry, with Notes. By J. Rymer Paterson, B.Sc., F.C.S., Lecturer on Chemistry in the Edinburgh School of Medicine. Second Edition. Edinburgh: Printed by Neill & Co.: 1890.

A useful synopsis for students.

Rhyming and Mnemonic Key to Materia Medica. By M.D. London: L. & J. Parnell.

The author tells us in his preface that "this little work must be considered *an aid,* not *a complete guide,* to the conjoint exam. in Materia Medica."

It is difficult to conceive how this work can be an aid to any examination in Materia Medica. Certainly it is of no use to any student for the triple qualification in Materia Medica in Scotland.

This *Key* appears to be a burlesque on the conjoint examinations of the London colleges, and even wants the recommendation of being either clever or amusing. As examples of this author's rhyming, take the following:—

"*Next,* precipitated or milk of sulphur
A lozenge this has got for any gulpher."

Again—

"And then there's liquor ferri pernitrate,
Which in old diarrhœas will never be 'bate.'"

The Nursing Record Series of Manuals and Text-Books, No. 2. *Norris's Nursing Notes, a Manual of Medical and Surgical Information for the use of Hospital Nurses and Others.* By RACHEL NORRIS, R.R.C. (*née* Williams). London: Sampson Low, Marston, & Co., Ltd.: 1891.

THOSE who remember Miss Rachel Williams as Assistant Superintendent of Nurses of the Royal Infirmary of Edinburgh, and who have traced her excellent work at St Mary's, and again in Egypt, where she was acting Superintendent of the Military Hospital at Suez, know that she is a born nurse, with the very highest qualifications and a quite exceptional experience, and will expect much from this little book. There is much excellent teaching in it; it is full of practical hints and admirable advice, and yet it is not nearly so good as it should have been, simply because it is not well arranged. Anatomy, physiology, surgery, are all so jumbled up as to remind one of the whist player who hops lightly from twig to twig. Some of the muddles are excessively funny. Thus, after "modes of death" we have in same chapter, "ward duties, cupping, enemata, bandages, hysteria, recovery from drowning, and disinfectants," finishing up with "sick cookery." The chapter on the anatomy of the eye passes in its very middle into a disquisition on the intelligent observation of the sick, including testing for albumen in urine.

When the book might have been made such a good one, it is annoying to find such flaws; but another edition will soon be called for, and it must be completely re-arranged.

The Medical Digest, or Busy Practitioner's Vade-mecum: being a Means of readily acquiring Information upon the Principal Contributions to Medical Science during the last Fifty Years. By RICHARD NEALE, M.D. Lond., etc. Third Edition. London: Ledger, Smith, & Co.: 1891.

THIS is a monument of industry; the author has spent about four hours a day for forty years in its preparation, and, so far as it goes, it fulfils what it promises. From a most copious index, containing between 16,000–17,000 separate entries, any subject will at once be found; its own section can then be at once turned up, and under sub-headings all sorts of references are given, with an enormous amount of information at once laid before the reader. The references, however, are simply to British Journals and to one or two text-books. Any practitioner or author wishing references to the chief British Journals of the last fifty years will find the maximum of assistance with the minimum of trouble, and what greater praise can be given regarding such a work than this?

The Medical Annual and Practitioner's Index. Bristol: John Wright & Co.: 1891.

We cordially congratulate the publishers on the ninth issue of this volume, in which the high standard of usefulness of the *Medical Annual* as a work of reference for practitioners is fully maintained. The present volume contains nearly three thousand references to diseases and remedies well arranged and indexed, and, in addition, several short articles on special practical subjects. Some of the latter are illustrated by excellent coloured plates and diagrams, which, in our opinion, very greatly enhance the value of the book.

The Musings of a Medical. No. 1. Edinburgh: James Thin: 1891.

This is an exceedingly clever little bit of work. Two musings,—one grave, didactic, full of a sad philosophy; the other gay, a bit of riotous fun describing, from the point of view of a student belated in the dissecting-room, the grim, yet jocular amusements of the "subjects" and skeletons. Some of us remember how Christopher North, on one of his gayest holidays, had a kind thought for the dulness and solitude of the lot of the skeleton hanging in Dr Munro's anatomy class-room. According to our author, the skeletons of the New University Buildings have a pleasant enough time. We will not spoil the author's tale by analyzing it, but his artist has done his work admirably: the skeletons which swarm on every page are full of character and life, and play their football match and do their fooling brilliantly. One of the best is a coy young person, who carries the skeleton of an *en-tous-cas.* The author apparently wishes to be nameless, though we have penetrated his erasure. The artist has boldly signed his name, but evidently suffers from agraphia.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXX.—MEETING IX.

Wednesday, 3rd June 1891.—Dr SMART *in the Chair.*

I. EXHIBITION OF PATIENTS.

1. *Dr Allan Jamieson* exhibited A FAVOUS FAMILY. He had attached this name because all the children, five in number, had suffered from favus. The eldest was twenty, and had had the disease sixteen years when he came under treatment; the youngest was seven, and had been affected two years. The cure had occupied from six to eighteen months, and six months had been allowed to elapse ere he had presented them to the Society, so as to ensure its permanency and completeness. No diseased hairs had been found for that space of time. In treating them—first, the hair had been kept very short, and the heads had been washed daily with a superfatted potash soap; second, all diseased hairs had been epilated over and over again; third, a paste consisting of one drachm each of resorcin and oxide of zinc, and two of lanoline, vaseline, and starch, had been thinly applied after the head had become dry. He would particularly direct attention to the pliancy and mobility of the still bare parts, and to the fact that these were being to some extent covered anew with hair.

2. *Dr Smart* showed a woman trephined for BASAL HÆMORRHAGE when nearly dead. The patient, a woman in her 46th year, was brought by the police to Ward VI. on June 22nd, 1890. She was conscious, and answered questions fairly well. There was a bruise on the right side of the head, near the parietal eminence, where she had received a blow. The face was drawn to the right, but without ptosis. There was no ocular deviation. The pupils were nearly equal, and reacted fairly to light; but it was evident that there was only half-field vision when tested by the rough method of using the fingers. In other words there was left hemianopsia. She could not raise the left arm, nor grasp with the left hand, the left forearm remaining flexed and the fingers curving upon the palm. The thigh and leg movements were defective in a less degree, and the sensibility of both arm and leg, as also of the whole of the left side, was irregular and deficient. Speech was somewhat slurring, but not aphasic. Some hours after admission coma set in, and some hours later Cheyne-Stokes breathing supervened, and soon became so grave as to threaten life. At his request Prof. Chiene trephined, first at the place where the blow had been received, and a second time further forward and a little lower. There was free hæmor-

rhage from the membranes, but no discoverable cause was found within reach of the director or finger to account for the symptoms. This result corroborated his diagnosis of a right basal lesion as determined by the existence of a left hemianopsia. The breathing, characterized before the operation by lengthened intermissions, and well-nigh suspended, had become almost normal before the operation was completed, and thereafter continued to improve. This effect was especially noticeable after incising the dura, thereby giving relief to the brain pressure. The patient, a few hours after the operation, had regained consciousness, and continued to improve as regards her intelligence, until the month of August, when she left the Hospital, in complete possession of her faculties, the hemiplegic disability above referred to continuing, with the addition that the left intercostal muscles were now observed to be involved in the paralysis affecting the left side. In May of the present year she came to the Hospital to show herself, and was re-admitted to Ward VI. to undergo electro-massage treatment for the hemiplegia, which remains in much the same condition as when she left. In other respects she enjoys excellent health, and her intelligence is unimpaired. So far as known to him, this was the first example of trephining for a basal lesion, the case being diagnosed from the beginning as an apoplexy at the base. The success attending it would doubtless encourage to the performance of that operation in similar cases, and, speaking generally, widen the basis whereby that operation was rendered justifiable. Since the patient's return to Hospital, Dr George Mackay, Assistant Ophthalmic Surgeon, Royal Infirmary, had made a most careful perimetric ocular examination, with the result of showing that the condition of left hemianopsia, above referred to, originally diagnosed, still continues.

II. ORIGINAL COMMUNICATIONS.

1. *Dr G. P. Boddie* read his paper on RELAPSE OR RECRUDESCENCE IN SCARLET FEVER; two cases, with a Note on the Literature of the Subject, which will appear in a future number of this Journal.

Dr P. A. Young said he had much pleasure in expressing his obligation to Dr Boddie for bringing this interesting subject before the Society. He had been in practice for twenty-four years, and had during that time seen several hundred cases of scarlatina, but it was only during this year that he had seen a case of relapse in this disease. During this year he had seen two cases, and, as they occurred in his own children, he was particularly interested in them. The children, aged respectively ten and eight, developed scarlatina at the beginning of the year. The older girl had a well-marked bright rash; temperature 103°; characteristic tongue, and sore throat. In three days she had a normal temperature, and went on well, but did not desquamate freely. At the beginning of the fourth week the temperature went up to 100°, and she had a well-marked scarlatinal rash, but not so bright as on the first occasion; the temperature fell in two or three days, but the rash remained out a week. When it disappeared desquamation was much more copious than on the first occasion. The child made a good recovery. The younger girl had a temperature of 102° at the outset of the disease, and sore throat, but the rash was not well marked, and did not remain out more than twenty-four hours. She went on well, but the peeling was not well marked, although decided. At the beginning of the fourth week she also had a rise of temperature to 100°, and a rash not more patchy than in the case of her older sister, and more dusky in colour. This made him at first think that both the second attacks were cases of rötheln—the former of a scarlatinal type, the latter of a morbillar. He now believed, however, that they were true relapses of scarlatina. The second girl desquamated abundantly after the second attack. He noticed in both cases after the relapse that the pulse was above 100° after the rash had quite disappeared, and the temperature was normal. The children were treated in the City Hospital.

Dr James Ritchie thought that relapses should be distinguished from second attacks of scarlet fever. He believed that relapses are not uncommon during the second and third weeks, but that new attacks are very uncommon until after a very considerable period of time has elapsed. They are not unknown, and he detailed a case which came under his observation. A child, aged 12, who had passed through a very sharp attack of scarlet fever, was at the end of six weeks bathed, and within half an hour thereafter removed from hospital. The following day she had a temperature of 102°·5, severe scarlatinal throat, and copious rash. The desquamation of the first illness was not completed. She passed through a second sharp attack, and again desquamated. After an attack, protection is afforded to the majority of individuals for life, but to many the protection is only for a limited period. Whatever lowers the vitality increases the risk of a fresh infection, and in the case he had reported he believed that the warm bath and the subsequent exposure had diminished the child's power of resistance, and had rendered the fresh infection possible.

Dr James said that Dr Boddie had done well in bringing such an important subject before the Society, and that he deserved thanks for the thorough way in which he had studied the literature of the subject. Relapses in scarlet fever were, he believed, more frequent than was ordinarily supposed, and the fact that the disease manifested itself so differently in different individuals was of importance in explaining why this should be. The disease is, of course, due to a virus entering the body and nourishing and reproducing itself there. Ordinarily, as the result probably of the introduction of some substance of the nature of ptomaines, the power of living of these lower organisms ceases after a certain definite period, and they are then eliminated. In this way the individual is protected, and it is evident that if in such diseases a protective change of this nature did not occur, the fever would go on interminably. In relapses, however, we must suppose that this protection has not been quite complete, so that before these lower organisms are eliminated they are able again to act on the individual and produce fever. In such a case the relapse occurs by auto-infection, just as it often does in typhoid fever as long as sloughs remain in the bowel. But it is possible also that a relapse may occur from reinfection. For example, a patient in a scarlet fever ward may have recovered from an attack, but yet the protection has not been complete, so that although he may have eliminated all the virus of the original fever, he is not proof against the virus of a fresh case entering the ward, and so a relapse occurs. This, he thought, applied to the case which Dr James Ritchie had just mentioned. The most marked case of relapse in scarlatina which he had seen was many years ago in Liverpool. A child was brought into hospital for croup, so ill that shortly after admission tracheotomy was performed. Some three days afterwards it was found to be affected with scarlet fever, and careful inquiry elicited that about four weeks previously it had passed through a similar attack.

Dr Shand made a few remarks.

Dr W. A. Jamieson.—While it was admitted that relapses might occur in the course of any of the zymotic diseases or the exanthemata, one must carefully distinguish between a relapse and a reinfection. A relapse was a relighting up of the complaint at some period within its cycle; a reinfection was a repetition of the morbid phenomena when the course of the disease had been run, or at any later period. As regarded relapses, there were differences in individual ailments; thus a relapse in enteric fever could not be well placed in the same category as one in scarlet fever. In enteric fever a relapse was concurrent with some renewed disturbance in the intestinal glands, and, as a rule, occurred early in convalescence. In scarlet fever there might be a recurrence of some of the symptoms ere the disease had proceeded very far, this he would consider as a relapse; but should all the phenomena be reproduced late in the desquamative stage, such were, he thought, rather to be regarded as instances of reinfection, either auto-infection, as in the case related by Dr James Ritchie, or communicated by another individual. Reinfection was probably more likely to occur if the dynamic effect of the scarlatinal virus had not been fully expended in the first attack. In one of Dr Boddie's cases the eruption was patchy in the primary seizure, while in the second the intercurrent attack of varicelle, for he had no doubt that it was really chicken-pox, favoured the theory of reinfection rather than that of relapse. He could not offer any precise statements as to the frequency with which relapses or instances of reinfection happened in the City Hospital,—probably one per. cent was not far from the truth. Epidemics of scarlet fever varied in character and intensity. In some one feature or complication was more frequent than in another—as rheumatism now, nephritis again—so possibly with respect to the proneness or otherwise to relapse or recur. He thought Dr Boddie had done good service by drawing attention to a circumstance to which too little attention had been paid. In reply to a question by Dr P. A. Young, he thought cases of reinfection were more likely to occur in hospital than in private cases.

Dr Smart, recalling his experience of the Fever House when he was in charge of it, remarked that it was then quite customary to send suspected scarlet fever cases to the Hospital, the diagnosis being at the time doubtful. The result of this practice was that many of these cases, some two or three weeks after admission, were taken with and passed through a perfectly typical attack of scarlatina. Outbreaks of this kind had far too commonly been regarded as secondary occurrences of the disease, and quoted as "relapses," or cases illustrative of "auto-infection" or "reinfection," whilst, as matter of fact, they really constituted the primary disease, the fictitious attack, on account of which the patient was sent to hospital, having been really a pseudo-scarlatinal illness. It was by no means a discredit to a medical man—not even to an expert in fevers—in the early stage of many cases, in which, as regards temperature, rash, throat, and the general condition of the patient, there was the closest mimicry of scarlatina, that he should suspend his opinion as to diagnosis. And it was his duty, moreover, where precautionary steps were so necessary, to give the patients and their relatives, as well as the community, the full benefit of any doubt which he might have. Now, with so large a number of such cases distinctly in recollection, and while fully admitting the feasibility of reinfection occurring in cases in which the original susceptibility to infection had not been wholly exhausted by a previous attack, he (Dr Smart) was nevertheless disposed to regard the percentage of such cases which actually did occur as very much smaller than was generally believed, and that such instances were only of exceptional occurrence. Then, he did not consider a "relapse" occurring in the course of a scarlatinal attack to be a relapse of the fever, or at all to be connected with an accession or renewal of the specific virus, or due in any sense to auto- or reinfection. A relapse occurring in the course of scarlet fever was brought about in the same way as in any other acute illness associated with febrile disturbance and high temperature. The cause may, for example, proceed from an error in diet, or from a chill predisposing to rheumatic or to renal complications. The effect of the intercurrency of any of these causes, or of any other illness, was to interfere with and retard the whole machinery of metabolism, and arrest the natural operation of those processes of assimilation, secretion, and excretion, upon whose activity the normal course of the fever depended. The result was accordingly to prolong the febrile attack and delay the crisis. The Society was really much indebted to Dr Boddie for his admirable communication, and for the very practical and useful discussion to which it had given rise.

Dr Boddie thanked the members of the Society for the kindness with which they had received his paper. He was delighted to have called forth so interesting a discussion. He thought it was impossible dogmatically to fix the date at which relapse ends and a second attack takes its place: Thomas suggests four or five weeks. It was more difficult, however, to accept the statement that an attack of scarlet fever at say six weeks from the first is to be called a fresh attack, in place of a relapse. The theory of "auto-infection" which had been suggested, if it mean anything different from a relapse, seemed to him difficult of explanation. He confessed the suggestion of Henoch was more intelligible, viz., that the scarlatinal virus had not been completely eliminated, and that it may be the process of elimination had in some way been checked by some disturbance in skin, lungs, or kidneys. The suggestion that a relapse takes place where the poison has not sufficiently made its impress on the system did not appear applicable at least to his second case, especially if that impress was held to be indicated by a slight or patchy eruption.

2. *Dr R. A. Lundie* read his paper ON A CASE OF SPONTANEOUS PNEUMO-THORAX AND PNEUMO-PERICARDIUM.

Dr James expressed the very great interest with which he had listened to this most instructive and interesting paper, and stated that he thoroughly agreed with Dr Lundie in his explanation of the sequence of events. Pneumo-thorax had occurred, the usual displacement of the heart to the right had been prevented by adhesions between the pericardium and lung, and through the pericardium rupture had occurred, so causing pneumo-pericardium. The only case in any way resembling it which he could recollect of was one quoted by the late Warburton Begbie in his article in Reynold's *System of Medicine.* In this case the mischief was tubercular, and in Dr Lundie's case it seemed to him that the process was also tubercular. At the upper part of the left lung tubercular deposit had been existent, causing adhesions between it and the pericardium, and also at parts between it and the chest wall. Pneumo-thorax had occurred in the ordinary way, and the strain on the adhesions between the lung and pericardium had caused a rupture through them into the pericardium, and escape of air into it from the pneumo-thorax. The fact that both the pneumo-thorax and pneumo-pericardium was followed by little or no pleurisy or pericarditis and rapidly healed, was in favour, he thought, of their tubercular origin, at any rate he had seen and heard of cases of early phthisis in which the occurrence of pneumo-thorax not only produced no pleuritic effusion, but seemed, by giving rest to the lung and allowing cicatrization, to heal the cavity which had caused it.

Dr Smart, alluding to the great clinical ability displayed by Dr Lundie in the diagnosis and management of his most interesting case, and to the masterly way he had brought the case before the Society, went on to cite the case of a young invalided soldier who died in Ward VI., and whose case bore some resemblances to Dr Lundie's patient. The autopsy revealed the existence of adhesions between the pericardium and pulmonary pleura, which had ended in perforation leading to pneumo-thorax, and which would have also led to pneumo-pericardium had not the pericardium become adherent to the heart. By means of these adhesions the collapsing lung had pulled the heart upwards and backwards under the left clavicle, so that its apex beat was in that quarter. The collapsed lung, itself honeycombed with tuberculous ulcers, was lying against the back of the left thorax. There was no effusion. This, and similar cases which he had seen, led him to think that Dr Lundie's case was of tubercular origin, and would probably run a similar course. He (Dr Smart) incidentally mentioned, in connexion with the case, that the title of one of his papers on undescribed neuroses, and which he trusted to have the privilege of bringing before the Society, was Pseudo-Pneumothorax, the object of which was to show that many published cases of so-called pneumothorax were fictitious and misnamed, having their origin in an entirely different condition. Dr Smart referred to diagrams of respiratory tracings in explanation of his views.

Dr Lundie, in reply, said that he had not stated that there was no tubercular (or, as he would prefer to call it, phthisical) process *at the bottom* of the mischief in his case, but that he thought an *ulcerating phthisical cavity* was excluded by the circumstances. He was well aware of the fact insisted upon by Dr James and Dr Smart —that early cases of phthisis in which pneumo-thorax occurs from rupture of a small cavity often do well; but that this should occur first in a pneumo-thorax and then in a pneumo-pericardium, where the conditions must be in some respects precisely the opposite, seemed to him so very improbable that he preferred to lay stress on the probable presence of extremely delicate tissues in his patient as being the most important factor in determining the ruptures.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LII.—MEETING VII.

Wednesday, 10*th June* 1891.—Dr BERRY HART, *President, in the Chair.*

I. *Dr Wm. Paterson* showed an ANENCEPHALIC FŒTUS.

II. *The President* read his paper ON THE CHANGES IN THE ANUS AND URETHRA DURING LABOUR (with lime-light projections), which will appear in a future number of this Journal.

Professor Simpson thought the President had laid the Society and the profession generally under new obligation by the communication to which they had listened. The phenomena which had been described and demonstrated were very familiar to all obstetricians. But it was a very important service that Dr Hart was rendering in getting these appearances photographed, so that accurate representations could be obtained, and no obstetric work would be complete henceforth which did not contain reproductions of Dr Hart's photographs of the pudenda during the transit of the head. As regards the explanation of the changes in the anus offered by Dr Hart, he (Prof. Simpson) had no criticism to offer. But with regard to the dilatation of the urethra, he (Prof. Simpson) was disposed to believe that this was not brought about merely by the pressure of the head when it came to the outlet. If observation had been made by the use of the Hegar dilators before the head had descended so far, he (Prof. Simpson) had no doubt that the calibre would have been found to be increased, as the orifice was sometimes dilated enough to allow the entrance of the tip of the little finger before the head had come to the pelvic floor.

III. *Dr Ballantyne* communicated for Dr Engelmann of Kreuznach a paper ON THE TREATMENT OF FIBROID TUMOURS, which will appear in a future number of this Journal.

Dr Church, in referring to the valuable nature of the paper, proposed that a vote of thanks from the Society should be transmitted to Dr Engelmann. He thought that it was an omission in the communication that more reference had not been made to the ages of the patients for whom Dr Engelmann advocated this Kreuznach treatment. Had some statistics been given on this point, physicians would have had hints as to the period of life at which most improvement was to be expected from a visit to Kreuznach. We know that from the climacteric period onwards there is a natural tendency for fibroid tumours to diminish in size. Should the improvement referred to by Dr Engelmann occur at this period, it might be difficult to determine what share was due to treatment at Kreuznach and what to Nature.

Dr Barbour said the Society was greatly indebted to Dr Engelmann for his communication. There were one or two points on which Dr Barbour would have liked further information. One was the age of the patients, which Dr Church had referred to, which must always be kept in mind in observations as to the diminution of a fibroid tumour. Another was as to the relative advantages of Apostoli's and the ergotin treatment. Dr Engelmann seems to have used them both with equal advantage, and does not express an opinion as to which is preferable. The statement that ergotin increased bleeding in some cases was an important one, as it went against the accepted view of the effects of ergotin. The paper was of great value as giving the results of one who had an opportunity of watching a number of these cases and noting the effects of the various modes of treatment.

Professor Simpson had sometimes used the ergotin daily for some weeks, but not for the same length of time as Dr Engelmann seemed to have done. He had occasionally found patients complain of increase of flow on administration of ergotin, but this was usually only temporary, and did not seem to him (Prof. Simpson) to be a contra-indication to the continuance of the drug. He thought Dr Engelmann had given a very fair and judicious review of the results of the various lines of treatment.

Dr Ballantyne said, in reply to some of the remarks that had been made by Drs Church and Barbour, that Dr Engelmann in his tables divided his patients simply into those above and those below forty years of age. Dr Engelmann also compared together the results obtained by the use of the baths alone and those obtained by the baths plus the use of ergotin or of electrolysis. He had not evidently treated any cases solely with electrolysis or solely with ergotin.

The Secretary was instructed to convey the thanks of the Society to Dr Engelmann.

IV. *Dr Haultain* read his paper on THE TREATMENT OF ECLAMPSIA DURING PREGNANCY, which appears at page 126 of this Journal.

Professor Simpson expressed the pleasure with which he had listened to Dr Haultain's interesting communication. He believed that Dr Haultain had made out a good case for the active treatment he advocated in these cases of eclampsia. No doubt that the method Dr Haultain had described would be likely to prove the best in many cases. But he (Prof. Simpson) believed that there were still some of the cases where this kind of labour could be completed by the operation of turning instead of forceps. It was an admirable paper, and most of them were probably prepared to second Dr Haultain in his advocacy of the active line of treatment.

Dr Milne Murray had the greatest pleasure in listening to Dr Haultain's eminently practical paper, which, in marked contrast to the teaching of the books, laid down a definite line of action on a thoroughly rational basis for dealing with this serious class of cases. As Dr Haultain has shown, the text-books differ as to the proper course to pursue in the treatment of these cases, most of them recommending, on very dubious grounds, a more or less expectant method of treatment. How eminently unsatisfactory such a course is, most have found from painful experience. Here, on the other hand, we have a series of cases treated to a satisfactory termination by a procedure which commends itself on physiological and pathological grounds, and for his own part he was glad to have, both as a teacher and practitioner, an experience such as this paper records to guide him in his teaching and practice. There was only one criticism he had to offer, and that was in relation to the mode of dilating the uterus. Dr Haultain seemed to think that the hand alone was in all cases a sufficient dilator. No doubt in the cases of the uterus at or near full term that was usually so, but in the case of a uterus at the seventh month or earlier Dr Murray had found that the fingers were often unable to cope with the rigid and spasmodic condition of the cervix which was often present. He had recently seen two cases which had demonstrated this. One of these, which occurred the other day in the Maternity Hospital, was a case of accidental hæmorrhage at the seventh month, in which he had occasion to effect delivery somewhat hurriedly, and in which he quite failed by means of the fingers to dilate the cervix, which only yielded after the prolonged use of Barnes' bags. The other case was a patient of Dr Playfair's, in whom repeated hæmorrhages about the middle of pregnancy, due to the presence of a fibroid, necessitated the emptying of the uterus. In this case the cervix was both rigid and intensely spasmodic. It was found to be impossible after the use of a tent to introduce more than one finger. A Barnes' bag was used, and after a considerable time the cervix yielded, and it was found possible to bring down the feet. As the body of the fœtus was being drawn through, the cervix closed round the abdomen, which suddenly gave way under the pressure, the viscera being projected out of the vagina. He would accordingly recommend that anyone proceeding to deal with a case on the lines laid down by Dr Haultain should provide for any such emergency by adding Barnes' bags to his armamentarium.

Dr P. A. Young had nothing to add from the obstetric point of view. He would like to make an observation on the dietetic treatment. Dr Haultain had laid down the principle that milk alone should be given as a diet during albuminuria. The most recent authorities on the treatment of kidney disease, Saundby and others, state that a mixed milk and farinaceous diet gave the best results. Dr Young would like to ask Dr Haultain if he had tried dry cupping as a means of overcoming the congestion of the kidneys and thus diminishing the albumen? Dr Young had used this method frequently, and found it very useful in reducing the congestion, and consequently the albumen.

The President congratulated Dr Haultain on his valuable paper. He suggested the use of the term "rapid delivery" instead of "accouchement forcé," as the latter was certainly not what Dr Haultain practised, and was reserved for emergency cases where the mother was on the point of death, and where post-mortem Cæsarean section was not allowed by the friends.

Dr Haultain thanked the Society for the manner in which they had received his communication. He had never tried dry cupping for the kidney disease, but would do so if further opportunity presented itself. Farinaceous diet had in his cases proved unsatisfactory, and seemed to cause an increase in the amount of albumen which necessitated the return to pure milk, which always proved most satisfactory. He was quite disposed to adopt Dr Hart's suggestion with regard to the term "accouchement forcé," and in its stead use the term "rapid delivery." The former, savouring as it did from its description in text-books of something terrible, was apt to cause the method of treatment he recommended to be discountenanced.

V. *Dr Brewis* read his NOTE OF A CASE OF PORRO-CÆSAREAN SECTION, which will appear in a future number of this Journal.

Dr Milne Murray congratulated Dr Brewis on the success of his operation. He had seen two cases last summer in which the elastic ligature had been employed,—one by Dr Halliday Croom, who removed a child and uterus from a dwarf woman according to the method recommended by Tait, and the other by Dr Underhill, who removed a ruptured uterus some hours after the uterus had given way and the child had escaped into the abdomen. In both the operation was perfectly successful, and the efficiency of the ligature was very striking. He thought Dr Brewis might do well to reconsider his resolution to abandon this ligature for the Koeberlé clamp; because the elastic ligature had the eminent advantage of following the contracting pedicle, and so acting as a powerful hæmostatic means at a critical time (during shrinkage), an advantage which the Koeberlé instrument did not possess. The two cases referred to presented a remarkable difference in the time taken for the pedicle to separate. In the first case, in which the tissues were healthy, the pedicle separated on the twenty-first day, while in the other, in which the rupture of the uterus and a malacosteon pelvis pointed to an altered condition of the tissues, the stump came away on the seventh day. There was one matter of much importance in securing the ligature which ought to be kept in view. He had found that unless the tubing was well lubricated the friction at the crossings of the knot was so great that it might prevent the loop round the pedicle being sufficiently tightly drawn, even though as much traction were made on the free ends as the tubing would bear. This point should be carefully seen to, and corrected by the proper lubrication of the tube at the knot.

The President congratulated Dr Brewis on his success. The future of Cæsarean section was not quite so brilliant, however, as Dr Brewis had pictured it. There was always the risk of ultimate uterine hernia among other things, and it would be long before it superseded craniotomy entirely.

Dr Brewis thanked the Fellows for their kind reception of his short communication. His only objection to the elastic ligature was that it caused eversion of the margins of the wound; the wire, being thinner, does not do so, and is, besides, quite as safe a constriction. In answer to Dr Hart's criticism, Dr Brewis said he thought he was justified in predicting favourably of Cæsarean section in view of the rapid advances which were being made in surgical science.

VI. *Drs A. S. Duncan* and *Wm. Paterson* gave in the ROYAL MATERNITY HOSPITAL REPORT for the Quarter ending 31st January 1891, which will appear in a future number of this Journal.

Part Fourth.

PERISCOPE.

MEDICAL PERISCOPE.

By Francis Troup, M.D.

Berlin. Klinische Wochenschrift, No. 19, 1891.—Dr H. Kossel, of the Moabite Hospital, Berlin, traverses the statements of Dr V. Liebman of Trieste that tubercle bacilli are to be found in the blood of patients who have been injected with tuberculin. His own experiments included, 800 observations have been made, and three tubercle bacilli have been found. He wonders how it comes about that Liebman in 141 investigations of the blood obtained a positive result in 56 cases, sometimes finding astonishing quantities of bacilli, and does not hesitate to say that dirty cover-glasses must have been used. From the overwhelming number of negative results in his researches, he is convinced that no entrance of tubercle bacilli into the blood takes place in those treated by tuberculin injections.

Ibidem, No. 20.—Drs G. Troje and Dr F. Tangl, of the Pathological Institute of Tübingen, give a preliminary communication on their investigations as to the antituberculous operation of iodoform, and as to the forms of inoculation tuberculosis resulting from injection of experimentally weakened tubercle bacilli. The questions they proposed to settle were three:—1. Whether outside the living organism iodoform can kill or render tubercle bacilli less virulent? 2. Whether iodoform injected along with tubercle bacilli into the animal body can diminish or prevent the development of local or general tuberculosis? 3. Whether the experimentally produced tuberculous abscesses of animals could be healed with iodoform in the same way as the cold abscesses of man?

How the iodoform, in vapour or powder or oil or emulsion with glycerine, was applied to the pure cultivations of bacilli is detailed *in extenso*, and they sum up the most important results of their researches as follows:—

Iodoform is a real disinfection stuff for the bacilli. It possesses an undoubtedly poisonous power over them, although only shown after somewhat long contact of the drug with the bacilli. Till now this action could only be demonstrated outside the living animal body, and is true of the dry powder, the solution in oil, and the emulsion with glycerine. A new support is therefore given for the efficacious and therapeutical application of the drug in suitable cases.

Theoretically it seems to the authors to be of high interest that they have found in iodoform a means of easily placing tubercle bacilli into varying degrees of enfeeblement. In this way they have been able to show that Baumgarten is right in saying that giant-cell formation in tuberculous tissues depends upon a certain degree of enfeeblement in the bacilli causing the diseased process. Through weakening of the bacilli to a certain degree they have, for the first time, been able to show in rabbits the characteristic macro- and microscopic appearances of *perlsucht*, and thereby to give a further experimental support to the conception that the *perlsucht* of cattle is not caused by a peculiar kind of bacillus, but is only the well-known tubercle one weakened in the body of the bovines. As they have succeeded, by continuous inoculation of *perlsucht* into rabbits, in producing at length the picture of an ordinary inoculation-tuberculosis, they believe they have filled up a certain hiatus in the proofs hitherto offered that human and bovine tubercle are really identical. Furthermore, they have by their modes of debilitating the bacilli engendered in rabbits a disease which, by its chronic course, limitation to lungs, bowel, and lymph glands, and by its formation of isolated cavities in the lungs, resembles more human lung phthisis than any disease hitherto produced by inoculation. They also, by injections of bacilli weakened as described, can produce in the rabbit typical cold abscesses.

Ibidem.—Finkelstein relates the result of sixty-three cases of strangulated hernia, fifty-three of which he succeeded in reducing by local etherization. The patient is laid on the back, pelvis slightly elevated, and thighs bent, the parts around being protected by abundant smearing with olive oil; every ten minutes or so a tablespoonful of sulphuric ether is poured on the hernial ring and tumour, until the latter loses its tightness and diminishes somewhat in size, when it returns spontaneously, or with slight help of the medical man. He thinks that omental herniæ will not yield to this treatment.

Ibidem, No. 21.—Dr Conrad Brunner, of the Hygienic Institute of Zürich, has a paper on the excretion of pathogenic micro-organisms in the perspiration. In a pyæmic patient with carbuncle he, of course with all the usual precautions, took the sweat of the forehead and cheeks and inoculated agar-agar and gelatine tubes therewith, and found that staphylococcus albus grew. Injected into the abdomen of a guinea-pig, this culture caused a fibrinous-purulent peritonitis, from the exudations of which he recovered the same coccus in pure cultivations. In six times out of eight his examinations of the sweat gave a positive result; more or less rich colonies of the coccus in question were cultivated from the sweat at a time when the micro-organism was demonstrated to be circulating in the blood.

Ibidem, Nos. 21, 22, 23.—Professors Kosturin and Krainsky of the Pathological Laboratory of Charkow, have a number of papers giving the results of their experiments to determine the comparative efficacy of putrefactive products and the toxines of tubercle bacilli on the course of experimentally produced tuberculosis in animals. The papers are illustrated with several temperature and blood-pressure charts. They summarize the results obtained as follows:—

1. The more complicated the constitution of the putrid medium the more poisonous are the products of the putrefactive ferments contained therein.

2. Putrid infusions of fresh flesh possess the strongest fever-exciting and poisonous properties; next in order is putrid bouillon of flesh, and next Nägeli's fluid.

3. Water extracts are more poisonous than alcoholic ones.

4. Putrefactive products operate most strongly if from three to thirty days old; after that time a gradual weakening begins, but the products of putrefaction lasting over a year still retain somewhat of their efficacy.

5. After subcutaneous injection the rise of temperature begins in the first hour, and becomes normal in twenty to seventy-two hours.

6. The products of a five to thirty day long putrefaction cause a very quick rise of temperature, which subsides in twenty-four hours; the products of a longer continued putrefaction produce a slower elevation of temperature, which only returns to normal at the end of the second or beginning of the third day.

7. The loss of weight is proportional to the rise of temperature, and to its duration.

8. The direct injection of putrid extracts into the blood causes unimportant and short-lived lowering of the blood-pressure, quickening of pulse and breathing.

9. Tubercle extracts possess powerful fever-exciting and poisonous properties; in most cases within the first hour after injection the temperature inclines to fall, and again the same after five or six hours.

10. Injection of tubercle extracts causes rapid and severe fall of the blood-pressure, the greatly quickened breathing and pulse only become normal after five to eight minutes, and the rhythm of the heart is disturbed for a considerable time.

11. Tubercle extracts operate powerfully and quickly, and directly on the endocardium and heart musculature.

12. Solutions of water extractives just the same as filtered putrid liquids can again become putrid, and thereby lose some of their potency.

13. Tubercle and putrid extracts injected subcutaneously may possibly, in a certain degree, prevent the further progress of tuberculosis, and perhaps render the animal immune against further infection.

14. Injection of such extracts may possibly localize the tubercular process and incline its products to caseation.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Tuberculin in the Treatment of Lupus.—Unna has carefully noted the influence of tuberculin in forty cases of lupus, and in a suggestive paper has thus stated the conclusions he has arrived at. And first, as to its diagnostic value. He admits that other skin affections, such as leprosy and lupus erythematosus, react to tuberculin, but the form of reaction is different. But it is not between these and lupus vulgaris that, as a rule, any difficulty in discrimination lies. Mistakes are most frequent between lupus and tertiary syphilis, particularly the inherited form. With reference to this point tuberculin is very favourably situated, since nearly all observers are agreed that there is no reaction in the case of syphilides. Turning to his experience of its therapeutic effect, it must be remarked that in the majority of the cases in which he used it other methods of treatment had been previously employed. Hence there was comparatively little of the lupus tissue present on which the lymph could expend its energy, and the symptoms were thus somewhat modified. Nothing like a necrosis proper of the tissues was in any case observed. The inflammatory swelling at the periphery of the nodules he regards as a sequela, not as a primary effect of the injections, and as due to a previous breaking-up and a previous absorption of the lupus tissue, an inflammatory reaction on the part of the bloodvessels. In no small number of the cases he noted a remarkable diminution in the lupus tissue, while the inflammatory hyperæmia was either extremely slight or entirely absent. Not only did this occur in the lupus tissue proper—the lupus plasmoma, as he calls it—but in the pseudo-cicatrix, or lupus fibroma, which makes up much of the so-called lupus tumidus and lupus hypertrophicus, and which is quite different from the true scar tissue, the final result of cure. The disfigurements due to lupus are very much due to the formation of this lupus fibroma, and hitherto the treatment of this has been unsatisfactory, but tuberculin exercises a highly favourable cosmetic influence on this, and can reduce the disfigurement occasioned by it to a minimum. As to recurrences after treatment by tuberculin, it is well known that lupus may reappear after an apparently satisfactory cure of many years standing. In his experience, however, the recurrences after treatment by tuberculin appeared more speedily and certainly than after some other methods. One circumstance was advantageous. The recurrences were so far all in the centre of the old lupus patches. This contrasts with those after scraping, scarification, treatment by pyrogallic acid, etc., which were frequently excentric. He advises the following course of treatment. Such doses of tuberculin are to be administered as are needed to initiate the resorption of the large masses. The throwing off of the crusts and the absorption of the plasmoma will be advanced by the daily application of zinc glycerine jelly, after washing with warm soap and water. When resorption is in progress, smaller doses can be given, till in many parts healing has taken place, while others seem refractory. No time should then be lost by increasing the dose, which would merely reduce the strength of and weary the patient. The still affected parts should be treated by other local measures, while all seemingly healed parts must be watched, and the minutest recurrences touched with a fine Paquelin (Unna's micro-cautery). Erasion should not precede the treatment by tuberculin, else the recurrences are more apt to be peripheral. The treatment by tuberculin is indicated in,—1. Very extensive multiple cases of lupus, since in such much is done at once, and all external methods are defective. 2. In all forms of lupus fibromas, in particular such as are associated with ectropia of the eyelids or lips, obstruction of the nasal passages, contractions of the joints, etc. 3. In lupus of the auditory canal and external ear, in which previously available methods are least applicable. In place of tuberculin, he also recommends painting with pure liquid carbolic acid; several coats are applied, and the scab so formed allowed to separate. Too large an area must not be painted at once, to avoid any risk of carbolic absorption, and the condition of the urine should be watched; nor should any impermeable covering be applied to the film of carbolic acid.—*Monatshefte für prakt. Dermatologie*, No. 8, 1891.

ON THE INFLUENCE OF INTESTINAL ANTISEPSIS IN THE TOLERANCE OF CERTAIN DRUGS.—Féré has observed the favourable effect of intestinal antisepsis in persons who are taking continued doses of bromide of potassium, in causing the disappearance of the disturbances attributed to its accumulation, and in particular the cutaneous manifestations. The antisepsis has been persevered in for nine months, and though the patients take daily one drachm of naphtol and half a drachm of salicylate of bismuth, no annoyance has been experienced. The relative tolerance of these drugs is therefore considerable. It would appear that one may regard as absolute the benefits which they confer on those taking bromide of potassium. There are several persons who have taken as much as half an ounce of the bromide daily, not only without injury to their general health, but with great advantage to their convulsive attacks. But borax, which has been employed in epilepsy, causes also gastric disturbance and eruptions. Gowers has shown that it may occasion an outburst of psoriasis, and Féré has seen eczema show itself. These eruptions may appear when doses of 15 or 20 grains are prescribed, yet occur more frequently and with greater intensity if a drachm or a drachm and a half be given daily. But in the case of two persons, without stopping the borax, which acted satisfactorily on the seizures, a generalized eczematous eruption disappeared in course of a few days when the naphtol and salicylate of bismuth in the doses mentioned were prescribed. In a third patient the cure of the boric eruption was obtained by administration of the salicylate of naphtol (Bétol) in the dose of 7½ grains daily. Before he used these antiseptic substances he never obtained the cure of the boric eruptions unless it was discontinued, and the same with those due to bromide. It is probable that this effect of intestinal antisepsis in the tolerance of drugs is not limited to those named, but may be had recourse to under other circumstances, and in particular against drug eruptions combined with gastro-intestinal disturbance of toxic origin.—*Comptes rendus des séances de la Société de Biologie*, 1890–91.

Bassorin Paste: a new base for Dermatological Preparations.—Elliot has drawn attention to this, which promises to fill a want in pharmacy. It had been suggested to him by M. Lascar, the pharmacist of the Demilt Dispensary, as a substitute for the gelatine base recommended by Unna and others. Bassorin itself belongs to the class of vegetable mucilages derived from bassora gum tragacanth, and other sorts of gums. It is tasteless, inodorous, and nearly colourless; insoluble in cold water, and swelling up into a viscous mass when treated with hot water. When this is mixed in proper proportions with water, glycerine, and dextrin, a compound to which the term bassorin paste has been applied is obtained. When composed of the substances named alone, it is of the consistence of a jelly, tawny in colour, somewhat resembling vaseline. It has no particular odour, is neutral in reaction, does not decompose when kept, though, if in a damp place, the surface may become mouldy; when exposed to the air it dries, and should therefore be kept in well-closed jars, preferably of glass. Yet even if it has hardened, when rubbed up with a little water it becomes as good as ever. The base does not come off when once dry upon the skin, and thus soiling of the linen and bed clothes is avoided. Should it be desired, it can at any time be easily removed by washing with a little water or a damp sponge. Almost any drug can be incorporated with it. If the one used be soluble in the water contained in the paste, the colour of the latter is unchanged; but if insoluble, then the colour will vary according to that of the substance added to it. Those drugs which exist only as fluids cannot be mixed, however, with the base, and neither can alcoholic solutions, but fats may be in limited amount. The former are excluded, from rendering the base too liquid—the alcohols, because they render it brittle and hard. The proportion of the fats must be small, since, if large, they would impair the property the paste has of drying and adhering to the skin. All substances, however, which exist in a solid form are easily incorporated with it in proportions as large as are ever used or found necessary. For instance, zinc oxide can be mixed with the base to the extent of thirty or more per cent.; carbonate of magnesia, ten or more; chrysarobin, fifteen or more; salicylic acid, salicylate of soda, iodoform, resorcin, boric acid, borax, sulphur, etc., each and all incorporate perfectly with the bassorin paste without altering its nature or properties. The percentages of the tars do not, however, go so high, on account of their oily character, but yet he has found that pix liquida, oleum rusci, and ichthyol could be added successfully to the amount of fifteen per cent. With the tars and oily drugs it is advisable to incorporate with the base ten or more per cent. of zinc oxide or some neutral powder, to counteract any possible impairment of the base. In using the paste it can be rubbed over the surface by means of the finger or a soft varnish-brush, enough being applied to cover the surface uniformly. Exposure to the air for a few minutes is sufficient to dry it thoroughly, and it then represents a flexible adherent covering for the skin, one which, moreover, sticks so firmly that it withstands brisk and forcible rubbing. While under favourable circumstances it may remain *in situ* for four days, it may be said that it is usually sufficient to renew it once in twelve or twenty-four hours. Its usefulness is only limited by the degree of moisture or of exudation on that portion of skin to which it is to be applied, its employment being contra-indicated if much oozing is present. Elliot cites some instances of eczema and psoriasis in which it seems to have acted well.—*Journal of Cutaneous and Genito-Urinary Diseases*, Feb. 1891.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women and Children, School of Medicine, Edinburgh.

The Diagnosis of Cystic Tumours of the Posterior Vaginal Wall (Heydrich, *Centralblatt für Gynäkologie*, No. 21, 1891).—Dr Heydrich puts on record a case of the rare condition known as diverticulum recti spurium, and makes some remarks on the diagnosis of cysts in the posterior vaginal wall. Cystic growths in this position are usually regarded as due to abnormality in the development of the Wolffian ducts; but in this case another explanation of the origin of the condition was found. The patient, a married but childless woman of twenty-eight years of age, had suffered from painful defæcation, the motions being often covered with mucus and sometimes with blood. The uterus was retroflected, and the posterior vaginal wall projected downwards and forwards. Recto-vaginal touch revealed a cystic growth lying between the vagina and the rectum, the upper border of which could not be reached. A further rectal examination revealed the presence of a circular stricture, and above the contracted portion of bowel was a rectal diverticulum communicating with the tumour in the posterior vaginal wall. The cystic growth was opened, a large portion of its anterior wall resected, and the margins brought together with sutures. The cyst contained grayish coloured mucus, and had a smooth lining membrane. After operation the rectal stricture rapidly yielded to treatment, and the remains of the cyst quickly atrophied. The condition was not an example of a true rectal diverticulum, but was probably due to peri-rectal abscess following upon ulceration of the bowel above the stricture.

THE TREATMENT OF PELVIC SUPPURATION AND INFLAMMATORY DISEASES OF THE OVARIES AND TUBES BY VAGINAL HYSTERECTOMY (Pozzi, *Gazette hebdomadaire de Méd. et de Chir.*, April 1891).—Professor Pozzi in this paper gives the reasons which have led him to reject the operation of vaginal hysterectomy in the treatment of pelvic abscess and of ovarian and tubal lesions. This operation has recently been prominently brought before the notice of the profession by Segond, who has affirmed that it possesses certain advantages over laparotomy in the treatment of the diseases above named. He has stated the advantages to be:—(1), the absence of any deformity, there being no external cicatrix left after the operation; (2), the greater safety of the method as compared with laparotomy; and (3), the more efficacious character of the procedure. Pozzi discusses these assertions at some length, and points out that in the case of laparotomies performed for conditions such as those above mentioned the resulting abdominal cicatrix is very small (2 to 3 inches in length), and does not constitute any but the most trifling deformity. With regard to Segond's statement as to the greater safety of vaginal hysterectomy, Pozzi adduces statistics to show that the laparotomies and not the vaginal hysterectomies have the smaller mortality. It would certainly seem that an operation carried out in a narrow canal such as the vagina, in which it is difficult to apply ligatures or other means of arresting hæmorrhage, must of necessity be more dangerous than one performed by abdominal section in which at any time room may be gained by prolonging the incision, in which hæmostatic means can be readily applied, and in which touch may be supplemented by sight if necessary. With regard to Segond's third contention—the greater efficacy of vaginal hysterectomy—Pozzi believes that it is not necessary to remove the uterus in order to cure pyosalpinx or pelvic abscess,—in the former disease salpingotomy is the requirement, in the latter abdominal section with drainage is the better method. He admits, however, that vaginal hysterectomy in cases of pelvic abscess provides a more complete means of drainage, and would employ it as a last resource when laparotomy gives incomplete results. In reference to Segond's operation in non-purulent inflammations of the tubes and ovaries, Pozzi points out that to remove the uterus in such cases is not only unnecessary but also dangerous. Salpingo-oophorectomy gives in such cases results as complete as does vaginal hysterectomy.

ENDOCARDITIS OF THE LEFT SIDE OF THE HEART IN A FŒTUS. Porak and Bernheim, *Bulletins et Mémoires de la Société Obstetricale de Paris,* No. 4, 1891).—Porak and Bernheim give in this paper an account of the somewhat rare condition known as fœtal endocarditis. The infant, a male, appeared normal at birth, but on the fourth day of life had recurrent cyanotic attacks with, on the fifth day, great difficulty in respiration. Death took place on the seventh day. At the post-mortem examination both lungs were found in a state of red hepatization. The right side of the heart appeared normal, save that the foramen ovale was widely patent. The left heart was markedly small in size. In the interior of the left ventricle were numerous adherent bands. There was no mitral valve properly so-called—it was represented only by some irregular projections. The valve consisted of a firm diaphragm with a small central aperture, and the aorta also was of small dimensions. The wall of the left ventricle was thickened. The authors regard the condition as due to fœtal endocarditis and not to a fault in development. They make allusion to the thesis of Haranger (1882), in which three varieties of left-sided fœtal endocarditis are described: one in which there is complete obliteration of the aortic orifice; a second, in which there is no obliteration of this orifice; and a third variety, the rarest, in which the mitral valve alone is affected. The case recorded belongs to the second category, but with this difference, that in it the mitral valve also is the seat of disease. The authors ascribe the pulmonary consolidation as well as the cyanosis to the cardiac condition.

Hysteria (A. F. A. King, *American Journal of Obstetrics*, May 1891).—Professor King presents in his contribution to the study of hysteria some novel views regarding the nature of that malady, and traces it back to its origin at the epoch when it was surrounded by the ancient environments of ancestral times. He is of opinion that there are different varieties of hysteria, but that the most common form in women is intimately related with the reproductive and sexual functions. This form he designates "sexual hysteria in women," and he would not look upon it as strictly a disease, but rather as a functional modification of the nervous government of the body designed for the purpose of race preservation. To quote his words, "natural, primary, sexual hysteria in woman is a temporary modification of the nervous government of the body, and in the distribution of nerve force (occurring for the most part, as we see it to-day, in prudish women of strong moral principle, whose volition has disposed them to resist every sort of liberty or approach of the other sex), consisting in a transient abdication of the general, volitional, and self-preservational ego, while the reins of government are temporarily assigned to the usurping power of the reproductive ego, so that the reproductive government over-rules the government by volition, and thus, as it were, forcibly compels the woman's organism to so dispose itself at a suitable time and place, as to allow, invite, and secure the approach of the other sex, whether she will or not, to the end that Nature's imperious demand for reproduction shall be obeyed." It may from frequent repetition become a habit of the nervous system and occur under emotions that have no direct relation with reproduction. Civilisation, Dr King believes, has changed the original type, and introduced all kinds of irregularities into the condition.

Ventral Hernia: a Plea for Extra-Peritoneal Operation, with Case (Edebohls, *Amer. Journ. of Obstetrics*, May 1891).—Dr Edebohls records a case in which the cure of this troublesome sequela of laparotomies was achieved by dissecting the cutaneous from the peritoneal layer of the hernial sac practically without opening the peritoneum, inverting the peritoneal pouch, and bringing together over it the separated margins of the recti muscles, fascia, and skin. The author sees possible contra-indications in the presence of ulcerations, excessive size, or extreme thinness of the hernial sac. He claims three advantages for the operation: first, the fact that it takes it out of the category of laparotomies; second, the strengthening of the new cicatrix by the inverted peritoneum; and, third, the possibility of a hernia the contents of which are matted together being returned *en bloc* into the abdomen.

OCCASIONAL PERISCOPE ON DISEASES OF THE EAR AND THROAT.

By R. M'Kenzie Johnston, M.D., F.R.C.S.E., Assistant Surgeon for the Ear and Throat, Edinburgh Royal Infirmary.

Intra-Laryngeal Injections in the Treatment of Certain Laryngeal and Pulmonary Affections.—Walker Downie gives an account of a somewhat extended trial of this treatment, which was first brought into notice by Rosenberg. He found that his patients had their sufferings alleviated, and a goodly proportion were not only markedly relieved, but were restored to apparent health. Among the conditions treated by him were tuberculous laryngitis with ulceration, early phthisis pulmonalis, pulmonary cavity, bronchiectasis, and bronchial asthma. After trying various combinations, Downie at last adopted the following solution as the one from which he obtained the best results:—

Menthol, . .	12 to 20	parts.
Guiaiacol, . .	2 to 4	,,
Vaseline oil, . .	to 100	,,

By means of a special syringe about one drachm of this was injected between the vocal cords into the trachea. The menthol acts, he says, as an anæsthetic, an antiseptic, and as a mild and harmless stimulant.—*Brit. Med. Journ.*, April 18, 1891.

Submembranous Local Treatment of Pharyngeal Diphtheria.—Seibert of New York, who is a strong advocate of the local treatment of diphtheria, points out that the various antiseptics applied to the throat do not reach and destroy the bacilli underlying the false membrane. In order to effect this object, he proposes to inject, by means of hypodermic needle-points, an antiseptic into the inflamed mucous membrane under the affected part. He has had constructed a hypodermic syringe, to which can be attached a long tube terminating in a flat, hollow extremity, from which projects a number of short hypodermic needles. A variety of shapes enable these needle points to be pressed into any part of the affected pharyngeal mucous membrane. After placing the syringe in position he presses the needles into the sub-mucous tissue and then injects about 20 m. of the officinal (U.S.) chlorine water. This liquid he finds to be the most suitable, the safest, and the strongest antiseptic for this purpose. He has tested this treatment in thirty-five cases, and with marked and rapid improvement, the temperature usually falling in a few hours. Out of these cases he only lost two, and then from complications. The general treatment is at the same time carried out with careful attention to detail.—*Archiv of Pediatrics*, June 1891.

AFFECTIONS OF THE EAR IN INFLUENZA.—Dr A. Joly of Lyons has, in an interesting and painstaking manner, investigated the various published papers by many eminent specialists in Germany and elsewhere on the subject of ear disease associated with influenza. He found, in almost all of them, that they coincided in some important points, and these he therefore considers we may accept as established beyond dispute. The frequency of ear affections in the course of an epidemic of influenza is greatly increased, rising in some clinics to four times the usual number of cases. A characteristic symptom very generally observed is hæmorrhage occurring from the membrane, or a discharge of blood-stained serum from the middle ear. There is usually violent pain, often persisting after the membrane has ruptured, and sometimes radiating through the neighbouring nerves, as specially pointed out by Politzer and Gruber. According to the latter, the ear affection is primary in a certain proportion of cases. The affection of the ear is sometimes accompanied by intense hyperæmia; and many cases have been recorded where it became necessary to open the mastoid. The treatment does not differ materially from an ordinary suppurating otitis. Where there is serous exudation without perforation, Michel of Hamburg thinks paracentesis useless or injurious, but Politzer holds an opposite view, with which the writer is inclined to agree as a result of his own experience.—*Annales de l'Oreille, du Larynx, etc.*, April 1891.

ON THE TREATMENT BY OPERATION OF FOREIGN BODIES IN THE CAVITY OF THE TYMPANUM: IMPORTANCE OF OPHTHALMOSCOPIC EXAMINATION.—As is well known, foreign bodies are frequently introduced by children and insane persons into the ear. While simple plans of procedure will generally suffice to dislodge the body, it is sometimes quite otherwise. This may be due to the nature of the substance or to ineffectual and violent attempts on the part of the surgeon or of friends driving it into the tympanic cavity. There is under these circumstances some difference of opinion as to whether the removal must be effected at once, or whether the effect of delay is permissible. E. Zaufal of Prague, in a paper on this subject, describes the conditions which decide him in favour of operation. If there is reason to suppose that delay will facilitate the removal of the body, he does not object to it, provided the other symptoms are not urgent; but if there is pain, a rise of even one degree in the temperature, and a commencing retinitis, he considers immediate operation necessary. He lays great stress on the ophthalmoscopic examination, and thinks that it should be daily carried out in every case which is being kept under observation. As to the operation necessary, that must depend on the circumstances of the case. If incising and drawing forward the auricle is not sufficient, it may be necessary to chisel away part of the posterior bony canal, or even to open through the mastoid antrum, so as to get behind the foreign body.—*Annales de l'Oreille, du Larynx, etc.*, March 1891.

CASE OF LIVING LARVÆ IN THE EAR.—When flies deposit their eggs in the auditory meatus, it is almost invariably found that the fly has been attracted to the ear by the existence of a bad-smelling discharge; and further, it is found that the resulting larvæ are difficult to remove, as they adhere very tenaciously. A case is recorded in the *Archives of Otology*, vol. xx., No. 1, by W. Baxter of Bangor, Maine, which differs in both these points. The patient, an American farmer, felt a fly enter his ear while he was mowing. He removed the fly, dead, with a stalk of grass, and probably pressed out some of the eggs in doing so. Four days later the ear was examined, and found to be full of active larvæ, which were easily removed by gentle syringing. The membrane was abraded but not perforated, and soon appeared perfectly normal again.

A NEW METHOD OF NASAL IRRIGATION.—Dr James B. Ball brings under the notice of the profession a very simple apparatus for applying any kind of lotion to the nose and naso-pharynx. The instrument which he describes is based upon a suggestion which originated with Dr Pins of Vienna, and has several advantages over the commonly used, and often abused, nasal douche on the syphon principle. The apparatus consists of a bottle similar to that known to chemists as a "wash bottle." It has a long tube and a short tube, both passing through the tightly fitting cork, and the former passes deeply down into the fluid contained in the bottle, while the latter merely passes through the cork. The short tube is so fitted that the patient can hold it between his lips while the end of the long tube is introduced into the orifice of one nostril. If he now blows down the mouth tube, the lotion rises up the opposite tube and flows into the nostril, round the naso-pharynx, and out by the opposite nostril into a suitably placed receptacle. Ball speaks highly both of the convenience to the patient and the efficiency of the method of application.—*Lancet*, March 14, 1891.

THE DIAGNOSTIC VALUE OF TRACHEAL TUGGING.—It was pointed out in 1878 by W. S. Oliver, that material assistance in the diagnosis of thoracic aneurism, in certain cases, could be obtained by a physical sign which he called tracheal tugging. The procedure is as follows:—"Place the patient in the erect position, and direct him to close his mouth and elevate his chin to the fullest extent, then grasp the cricoid cartilage between the finger and thumb, and use gentle upward pressure on it, when, if dilatation or aneurism exist, the pulsation of the aorta will be distinctly felt, transmitted through the trachea to the hand. The act of examination will increase laryngeal distress should this accompany the disease." In the present paper M'Donnell of Montreal calls attention to the above observation, and gives his experience of its value as an aid to diagnosis, and records a number of cases observed by himself where this sign was present. From these observations he formulates the following statements:—1. "Tracheal tugging" is never present except in aneurism. 2. When it is present, the aneurism is so situated as to press from above downwards on the left bronchus, or upon that portion of the trachea immediately adjacent to it. 3. Tracheal tugging may be present when many other physical signs are absent. 4. Tracheal tugging does not occur in aneurisms which do not involve the transverse arch. 5. Direct pressure upon the trachea does not produce tracheal tugging.—*Lancet*, March 1891.

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.—The following candidates passed their Final Examination at the sittings held in June 1891, and were admitted F.R.C.P. Ed.:—Fredk. Stephenson, Prestwich; Fred. Wm. Henry, Rainham.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, EDINBURGH.—The following candidates passed their Final Examination for the triple qualification in Medicine and Surgery in July 1891, and were admitted L.R.C.P. & S.E. and L.F.P. & S.G.:—Joshua H. Hart, Yorkshire; Mark Ringwood Rich, Clonmel; Daniel Albert Rose, Montreal; Herbert Danvers, Cape Town; Arthur Thos. Kember, South India; Edw. Edwards, Anglesea; Charles Frederick Weeks, Hull; Alexander Henry Dudley Salt, India; Ainslie Power Ardagh, Canada; William Charles Ellis, Devon; Nevil Pottow Cadel, Faringdon; David Kidd Muir, West Hartlepool; Alfred Jackson, County Cork; James Fox, County Tyrone; Emily Charlotte Thomson, India; Herbert Arthur Howes, Sale, Cheshire; Frederick William Marsden, Russia; Jane Marsh, Dorset;

Charles Alexander Macnab, Lanarkshire; Elizabeth Christie, Glasgow; Thomas Bernard Kelly, Galway; James Downie Ross Watt, Leamington Spa; Henry Robert Brown, Bangalore; Ernest Coleman Moore, Bristol; George Bidie, Fochabers; Henry Chestnut, Tralee; Alice Margaret Moorhead, Maidstone; Florence Gertrude Wells, Hôsur; Henry Arthur Giles Hadden, Wexford; Sydney Henry Merryweather, Yorkshire; John David Hadden, India; Edwin Dacre Dunn, Yorkshire; Ernest George Salt, Norfolk; William Fingland, Liverpool; Edward William Sharman, Rutland; Paget Dundas Minchin, Kilkenny; Timothy White, Ballymena; Samuel Moore Giffen, Belfast; Joseph Gordon-Smith, Jamaica; William Forsaith Bauchop, New Zealand; John Cuthbertson Walker, Helensburgh; John Henry Boland, Dundee; and Edward Hughes, Carnarvon.

IN view of Dr Murdoch Brown's retirement from the post of Clinical Medical Tutor in the University of Edinburgh,—an appointment which he has held for the past sixteen years, and the duties of which he has discharged with such signal success,—it has been thought that it will be a pleasure to many of his old pupils to avail themselves of this opportunity of presenting him with some substantial expression of their regard, and of their indebtedness to him for his valuable instruction. It has therefore been suggested that a suitable presentation be made to him at a public dinner, to be held at the commencement of next winter session, the date of which will be duly intimated.—C. E. W. Macpherson, C.A., 28 St Andrew Square, Edinburgh, Treasurer.

BAD PYRMONT.—As many of our readers and their patients will be going abroad this month for change of air, we may call attention to Bad Pyrmont as worthy of consideration. It is a charmingly situated spot—neither too crowded, too fashionable, nor too dear. It is easily reached from Edinburgh by going by sea to Hamburg, from which town it is only six hours by rail. The baths at Pyrmont are exceptionally well arranged, and, as both chalybeate and saline waters can be obtained, it possesses advantages over other well-known spas. During August and September an English service is conducted by a resident chaplain.

THE MEDICAL MISSION IN MADAGASCAR.—According to the report for 1890, this Mission seems to be flourishing. Drs Fenn and Moss had an increased number of both in-patients and out-patients. There were 488 of the former and 1620 of the latter. Medical cases greatly preponderated, but there were 102 operations performed. One case was fatal after abdominal section. Besides the hospital work, Dr Fenn received at his own house 1485 visits, and Dr Moss 1006. The report contains a record of the cases treated during the year. Influenza had been prevalent; 53 cases of pneumonia were treated in hospital. Heart disease is very common, there having been 65 cases in hospital. This is ascribed to the almost universal prevalence of syphilis and rheumatism, and the constant carrying of loads, there being no carts or beasts of burden in the island except at one or two sea-ports. There were a few interesting cases of gunshot and other wounds. The nurse-superintendents add two very interesting reports.

A new hospital is being built for the Mission outside the town of Antananarivo, which will be finished this year. One most hopeful sign of this very useful and flourishing Mission is that there is a Native Medical Missionary Society connected with it, and consisting of all the students and young doctors connected with the Mission. They propose sending one of their number as a missionary to some distant part of their island, and for this purpose they had collected 108 dollars as a nucleus. Altogether the London Missionary Society is to be congratulated on the efficacy and usefulness of this branch of their mission work.

LAOLING MEDICAL MISSION.—We have received the report of the Mission for 1890, and good work is apparently being done by Dr Shrubshall, who studied in Edinburgh. 2547 out-patients were treated during the year, and 57 in hospital; 44 major operations were performed, and 51 operations on the eye. That the Chinese require medical missionaries is proved by the following extract from the report:—"In one afternoon's work we met with the following instances of Chinese therapeutics,—For chronic rheumatism a paste made by mixing vinegar with the earth thrown up by a rat when burrowing in the floor or wall—'to be applied to the part affected.' For enlarged spleen in a child. The child's abdomen was almost covered with cabalistic characters, supposed to be written by a hand under the guidance of some benevolent spirit." "A man came for medicine for his wife; he was supplied with some pills; in a day or two he brought them back, saying his wife was completely cured by the *sight* of them; he gratefully returned them for the use of any similarly afflicted."

WE have received from Johnson & Johnson, manufacturing chemists of New York and London, specimens of some of the special plasters, moist antiseptic dressings, and vesicants, for which they are noted. The Surgeon's Silk Plaster Gelatole is an exceedingly pretty preparation, with excellent adhesive qualities. The Linton Moist Antiseptic Dressings of various kinds—borated, carbolated, sublimated, etc.—are put up in convenient boxes, are always ready for use, and a piece of required size can be cut off at once without disturbing the rest of the dressing. These moist dressings have an advantage over the dry gauze in being better able than dry dressings are to resist the attack of micro-organisms. The plasters of belladonna and of cantharides are both efficient and neat, and are also credited with power to resist the decomposition to which plasters are liable. Their mustard plasters and prepared linseed poultices are also elegant preparations.

A CHICAGO DOCTOR'S ADVENTURE.—An exceedingly interesting adventure happened to a Chicago physician during the meeting of the Medical Congress at Berlin last year. The Illinois man passed over the Linden late at night reflecting over the glory in store for his native city. Suddenly a suspicious-looking individual hustled by, closely touching the doctor. The latter, with the ingenuity of the Western man, felt for his watch, and missing it, unhesitatingly began the pursuit of the robber. The suspicious individual fled through the Brandenburg Gate into the Thiergarten, the American doctor in close pursuit, loudly crying, "Put up that watch!" Near the Victory Column the robber was caught by the doctor, and compelled to deliver the watch, after which he was released. The Chicago man returned to his hotel, proud of himself and of his native city and country. But, lo! on the table he beheld his watch, which he had forgotten when leaving the hotel. Next morning all the papers published the story of a robbery in the Thiergarten: a French doctor, they said, had been pursued by a burly, powerful robber, attacked and robbed of his valuable watch.—*Philadelphia Medical and Surgical Reporter.*

PUBLICATIONS RECEIVED.

James B. Ball, M.D., etc.,—Intubation of the Larynx. H. K. Lewis, Lond., 1891.
T. R. Barker, M.D.,—Obstetrical Dont's. W. A. Ferree, Philadelphia, 1891.
W. H. Bennett, F.R.C.S.,—On Varicocele. Longmans, Green, & Co., Lond., 1891.
H. R. Bigelow, M.D.,—Plain Talks on Electricity and Batteries. H. K. Lewis, Lond., 1891.
R. L. Bowles, M.D., etc.,—On Stertor, Apoplexy, and the Management of the Apoplectic State. Baillière, Tindall, & Cox, Lond., 1891.
F. H. Champneys, M.D., etc.,—On Painful Menstruation. H. K. Lewis, Lond., 1891.
S. Fenwick, M.D., and W. S. Fenwick, M.D.,—Outlines of Medical Treatment. J. & A. Churchill, Lond., 1891.
Lucy Fitch,—Massage for Beginners. Sampson Low, Marston, & Co., Lond., 1891.
A. W. Gerrard.—New Official Remedies, B. P. 1890. H. K. Lewis, Lond., 1891.
A. Harries, M.D., and H. N. Lawrence,—A Manual of Practical Electro-Therapeutics. Sampson Low, Marston, & Co. Lond., 1891.
H. Helbing, F.C.S.,—Modern Materia Medica. British and Colonial Druggist Office, Lond., 1891.
International Clinics, Vol. 1. Young J. Pentland, Edin., 1891.
Alex. Johnstone, F.G.S.,—Botany Notes for Students of Medicine and Science. E. & S. Livingstone, Edin., 1891.
H. M. Jones, M.D., etc.—Subjective Noises in the Head and Ears. Baillière, Tindall, & Cox, Lond., 1891.
A. H. N. Lewers, M.D., etc.,—A Practical Text-Book of the Diseases of Women. H. K. Lewis, Lond., 1891.
Lewis's Pocket Medical Vocabulary. H. K. Lewis, Lond., 1891.
Ed. Martin, M.D.,—Minor Surgery and Bandaging. H. K. Lewis, Lond., 1891.
William Murray, M.D., etc.,—Illustrations of the Inductive-Method in Medicine. H. K. Lewis, Lond., 1891.
Richard Neale, M.D.,—The Medical Digest. Ledger, Smith, & Co., Lond., 1891.
Rachel Norris, R.R.C.,—Norris's Nursing Notes. Sampson Low, Marston, & Co., Lond., 1891.
Dr Parsons,—Report on the Influenza Epidemic of 1889-90. Lond., 1891.
W. H. & Mrs Poole,—Cookery for the Diabetic. Longmans, Green, & Co., Lond., 1891.
Surg.-Major J. H. Porter,—The Surgeon's Pocket-Book. Chas. Griffin & Co., Lond., 1891.
B. W. Richardson, M.D., etc.,—Thomas Sopwith, M.A., C.E., F.R.S. Longmans, Green, & Co., Lond., 1891.
F. T. Roberts, M.D.,—Notes on the Additions made to the British Pharmacopœia, 1890. H. K. Lewis, Lond., 1891.
Saint Thomas's Hospital Reports, Vol. 19. J. & A. Churchill, Lond., 1891.
A. M. Shield, F.R.C.S.,—Surgical Anatomy for Students. Young J. Pentland, Edin., 1891.
The Musings of a Medical. James Thin, Edin., 1891.
Transactions of the Obstetrical Society of London, Vol. 33, Part 1.
Transactions of the Twelfth Annual Meetting of the American Laryngological Association. D. Appleton & Co., New York, 1891.
A. Wheeler.—Our Unseen Foes and how to meet them. John Wright & Co., Bristol, 1891.
G. Sims Woodhead, M.D.,—Bacteria and their Products. Walter Scott, Lond., 1891.
J. B. Yeo, M.D.,—The Treatment of Typhoid Fever. Cassell & Co., Lond., 1891.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON THE SERVICE RENDERED TO MANKIND BY MEDICAL SCIENCE. A Graduation Address delivered on August 1st, 1891.

By William Rutherford, M.D., F.R.S.S. L. and E., Professor of Institutes of Medicine, University of Edinburgh.

Bachelors of Medicine and Masters of Surgery,—On this occasion I am called upon by my colleagues to congratulate you on having brought your student days to a successful close. We offer you our hearty congratulations on having without a shadow of favour, and by dint of your own ability and application to study, won the place you now hold as graduates of our University and members of the medical profession.

Who of us can look back on our graduation day without feeling it was the first day of a new epoch in our lives. We felt as if released from the heavy chains of study, and with recovered elasticity we stepped into the wider world of professional life buoyant with hope and expectation. Every graduate of to-day feels as if he had reached the summit of a steep ascent. He rests a while, but with a feeling that having proved himself equal so far to the arduous task set before him, he can look forward with confidence to the greater effort that still awaits him.

You have come to this seat of learning from all quarters of the globe, and having learned the principles and practice of Medicine and Surgery, many of you are about to depart to the distant lands of your birth. You meet to-day for the last time those who have been your fellow-students and your teachers, and ere we part, I have, in the name of the University, to wish you all good-speed, and the full measure of success that is certain to fall to the lot of every one of you who faithfully discharges his duty. As you travel to your distant homes, perhaps with some feeling of suspense regarding the future, dispel your anxiety and look hopefully forward. Be assured that the messengers of the healing art are ever welcome, and those who are sufficiently learned and diligent are ever in demand.

Doctors of Medicine,—We have to congratulate you on the successful establishment of your claim to the higher degree now conferred upon you. The proofs of your title to the degree of Doctor furnished in your *theses* have in this as in other years convinced us that amongst our graduates we have every year men of high talent, able to investigate difficult problems, eager to research, and anxious to contribute to the advancement of medical science. We have to congratulate those whose theses have been found worthy of special marks of commendation, and more especially those who have gained medals. One has only to scan the list of thesis medallists in past years to perceive that medals obtained for original research are sure tokens of future eminence. On this day one and twenty years ago Dr Ferrier received a medal for his thesis on "The Comparative Anatomy of the Corpora Quadrigemina," a subject of research suggested to him by the present speaker, and which became the stepping-stone to those important researches on the localization of sensory and motor centres in the brain which have so greatly advanced our knowledge of the physiology and pathology of that organ, and have been so great a help in medical and surgical diagnosis. As one of our most distinguished graduates, and as a researcher who has greatly contributed to the advancement of medical science, we welcome him back to his *Alma Mater*, and congratulate him on his having received the Cameron Prize.

Gentlemen,—Let me now place before you a brief outline of the service rendered to mankind by medical science. I trust the announcement of so vast a subject may not alarm you. I shall not do more than trace an outline, and I shall endeavour to render myself intelligible to the non-medical graduates and to your friends who have come here to witness your graduation. I need hardly remind you that there has been no revelation regarding the nature of life and the causes of disease other than that afforded by the development of science. The old ideas of a pre-scientific age, so far from helping the human mind to apprehend the nature of disease, have scarcely even now ceased to hamper the progress of medicine. In the primitive period of human life the imaginative faculty confidently offered to explain the causes of events. It was natural enough to regard the roll of thunder as the voice of an angry deity, for it resembled the deep toned roar of the lion in the forest; and when living things fell dead before the thunderbolt discharged from the frowning cloud, it was not unnatural to suppose that an angry Jupiter was discharging the fiery shafts of his vengeance on the inhabitants of earth. It was not difficult to imagine that when living things fell victims to a deadly pestilence it was sent from heaven to scourge man and beast. When the phenomena of life were confidently ascribed to good and evil spirits jealously contending for the mastery of mankind, it seemed not unreasonable to suppose that crazed men and women had fallen victims to the spirits of evil. The pages of history are blotted with the terrible results of these mistaken ideas. The fearful cruelty to which thousands of half crazed old women were subjected on the groundless fictions relating to witchcraft, the barbarous treatment of the insane prevalent nearly to the close of the last century, show what a fearful scourge false ideas may be. Of course, it is easy for the enlightened century to complacently smile at the darker age; but we must never under-estimate the vast difficulty encountered by the human mind in groping its way amidst the complicated machinery of Nature, and striving to find the secret springs which science with her manifold methods alone could reveal.

To Greece we owe the initiation of that great movement by which the human intellect was emancipated from the fetters of Eastern and of Egyptian superstition. The Grecian mind boldly asserted its right to explain phenomena without regard to tradition, and to follow the argument whithersoever it might lead. It was in that spirit that Hippocrates urged his students to believe that all diseases spring from natural causes, and that none of them should be ascribed to visitation by the gods. That was the key-note of rational medicine, struck three and twenty centuries ago, but which had to be sounded again and again through many centuries ere his successors were brought into harmonious procession.

The grandest achievement of science is the establishment of the principle, that Nature works under fixed laws. We owe to Greece the fertile germ of that great conception which became the basis of all modern science. That great principle throws a flood of light on the past, and enables the mind in some measure to realize the splendid plan of creation, and to recognise the vanity of many of the ideas of an age when the laws of Nature were unknown to man. When the telescope penetrated the veil of distance and revealed the nature and movements of the solar system that led to the discovery of the law of gravitation, men paused in wonder at the simple majesty of a law that rules at once the smallest, the greatest, and the most distant masses of matter. When the microscope revealed the structure of plants and animals, and led to the discovery that all living organisms are developed by the multiplication and modification of cells, there again was an unexpectedly simple natural law of vast significance. There is nothing more interesting than to trace the successive stages in the development of one of the higher animals from the simple germ to the highly complex organism, and to perceive that all arise from the repeated division and modification of minute cells. That simple law of cellular development has linked together the whole world of plant and animal life in times present and past.

The sciences embraced in the Faculty of Medicine search out the laws of living Nature, the structure of living organisms, the activities they display, their modes of development, the conditions necessary for the attainment of their perfect state, the causes of failure, the nature of disease,—its prevention, its relief, its cure,—the means by which human life may be prolonged and untimely death avoided.

When we look into the history of the healing art, two facts stand out in striking contrast—the great antiquity of Medicine, and the comparatively recent period during which she has made her rapid advance. In Egypt 6000 years ago the earliest known book on human anatomy issued from the pen of a king. Anatomy had, therefore, a good start in the medical race, and it is not surprising that it should be the most advanced department of medical science. But although much skilful use of the scalpel was required to reveal the coarser structure of the body, it was a far more difficult task to ascertain the physiological functions of its parts. Although the structure of the heart and arrangement of the bloodvessels were known in the early period, this era had reached the 17th century before the circulation of the blood, the cause of the pulse, and the nature of the heart's action, were discovered. In the older time Surgery, no doubt, was able to render some mechanical help in cases of accident, hæmorrhage, and such like, but, of course, modern Surgery and Medicine date from the beginning of the 17th century, when Harvey made his great discovery of the circulation. The tardy discovery of the fact that the blood moves in a circle shows how long medical science had to wait before a comparatively simple problem relating to the movement of a fluid within a system of tubes could be solved.

But the motion of the blood is only a small part of the great process of nutrition, the real nature of which remained a mystery until Chemistry made her great revelations. It was not until 1774 that Priestley discovered oxygen and the composition of the atmosphere, and so revealed the secret of the old spirit of the air. Then for the first time it became possible to understand the nature of respiration and to enter the field of physiological chemistry. It was only in 1811 that Charles Bell discovered the different functions of the two roots of spinal nerves, and so gave the key to our knowledge of the functions of the nervous system. It was only in 1822 that the observations of Beaumont supplied our first real knowledge of the digestive process. It was only in 1839 that Schwann made his great discovery of the cellular structure and development of animal tissues, which is the foundation of microscopical anatomy and of cellular physiology and pathology. It was only in 1842 that Bowman advanced his theory of the action of the kidney. Although Stephen Hales measured the blood-pressure in 1740, it was not until 1847 that Ludwig introduced the graphic method of studying the circulation and other movements. It was only in 1849 that Bernard discovered the function of the pancreas, and only in 1853 that he discovered the glycogenic function of the liver, and vasomotor nerves. Therefore, if we except Harvey's discovery of the circulation, all the chief discoveries in microscopic anatomy, in the physiology and pathology of the tissues and organs, have been made in a century and a half, and, indeed, most of them within the present century.

In the world's history the 19th will ever be known as the great scientific century, when the human mind first gained its great mastery over the forces of Nature, and compelled her to reveal some of her greatest secrets. The sciences embraced in the Faculty of Medicine have made rapid progress, and rational or scientific medicine, as distinguished from the old empirical guessing and groping in the dark, is now fairly on the open highway of science, led by strictly scientific methods of inquiry, and ever gaining a deeper knowledge of living nature, and a more successful control of her powers. Only those who are intimately acquainted with the subtle character of the problems in physiology, pathology, and therapeutics that still await solution, can adequately comprehend why so much laborious research by so many minds is required to make even a little progress; and only the initiated can understand why Nature will ever hold secrets which the human mind can never penetrate.

Amongst the services rendered by medical science to mankind there is none greater than the discovery of anæsthetics. The idea of performing a surgical operation painlessly on a person in profound sleep is as old as the first chapter of Genesis. It was not until ether and chloroform emerged from the retort of the chemist that anæsthesia—sought after with indifferent success through many centuries—became at last the invaluable handmaid of Medicine. Anæsthesia has robbed surgery of its terror; the patient no longer shrinks from suffering; the surgeon no longer performs his delicate operations with precipitate haste, impelled by the thought that at every moment he is producing pain. Many a valuable life has come to an untimely end because the patient shrank from the thought of enduring the pain of an operation which might have saved his life by timely removal of his malady; and many a one, weakened by disease, has died during the operation or after, from shock to the nervous system produced by the pain. There can be no doubt that the use of anæsthetics has indirectly lessened the mortality from surgical diseases and operations. Those of us who long ago listened to the lectures of Sir James Simpson, remember well his reference to the prejudice he had to contend with when he introduced chloroform into his practice. In these times there is a loud cry of indignation if a medical man dare to inflict pain for a scientific purpose; but when Simpson dared to abolish the pains of childbirth by the administration of chloroform, he was accused of tampering with the predestined course of Nature,—so curious is the inconsistency of human prejudice.

In the practical departments of medicine Surgery has ever held a foremost place. The early study of anatomy and the mechanical nature of the surgeon's art enabled him to render greater help than the physician contending mainly with internal maladies. But it is only in quite recent times that Surgery has achieved her great success. The greatest advance of modern Surgery has undoubtedly been in the treatment of wounds, especially those produced during surgical operations. The comparative safety with which these may now be performed is Surgery's chief triumph. The Edinburgh School of Medicine can claim the initiation of the modern method. The acute observation of Robert Liston and James Syme led them to perceive that Nature's method of healing a wound had not been rightly apprehended, and that the unenlightened efforts of the older surgeons had been a hindrance rather than a help to Nature. They banished the crude old dressings of wounds, and adopted the simple method of interfering with healthy living tissues as little as possible. But although remarkable success followed the adoption of their method, it required the addition of the antiseptic system, with which the name of Sir Joseph Lister will ever be associated.

One of the most interesting features of science is the suddenness with which side lights may be thrown on dark places from unexpected quarters. Louis Pasteur, a French chemist, turns his attention to yeast, and studies with keen insight the process of fermentation. Many would have smiled with incredulity had they been told that Pasteur's study of the yeast fungus would ere long lead to reform in the treatment of surgical wounds. But when it was discovered that the putrefaction of a sore is a fermentation induced by minute fungi analogous to yeast in their mode of action, Lister perceived that the surgeon must guard against putrefactive fungi, lest they defeat Nature's method of healing. Thus, from chemical and botanical research, the surgeon unexpectedly obtained the cue which has enabled him to almost entirely prevent the fatal blood poisoning apt to be engendered by the pernicious effects of bacteria on the juices of wounded tissues. Those who, like myself, studied Surgery before the adoption of the antiseptic system can fully understand how great a blessing the method is to the surgeon and his assistants as well as to the patient; and those of us who studied Surgery in German and French hospitals previous to the introduction of Lister's antiseptic method can well understand how great a blessing it must be to patients in them.

That department of Surgery with which the names of Spencer Wells and Thomas Keith are so intimately associated affords striking illustration of the wonderful success with which some special operations may be conducted, although the older surgeons scarcely dared to attempt them. Sufferers from distant countries came to Edinburgh to avail themselves of Keith's great skill, and we can only regret that the vortex of the great metropolis has withdrawn him from us.

Within the last few years intracranial Surgery has undergone complete renovation. No organ of the body has been so difficult to investigate as the brain. Until some thirty years ago it sat within its bony box enigmatical as the sphinx, and indisposed to reveal to the physiologist its long kept secrets. But its own weakness and tendency to disease at length divulged to the inquisitive mind of Paul Broca the significant fact, that when a certain portion of the brain is destroyed by disease the recollection of words is lost. That the power of expressing one's self in articulate language should depend on a relatively small portion of the cerebral convolutions was a startling discovery that stimulated others to inquire. Hughlings-Jackson observed that epileptiform convulsions in special groups of muscles may proceed from disease of certain convolutions of the cerebrum. But the precise knowledge we now possess came from the use of electricity as a stimulus to the brain by Fritsch and Hitzig, and David Ferrier. The discoveries made by the German observers, though eminently pathbreaking, were completely eclipsed by those of Ferrier, who well deserves all the credit he has received for the accuracy and scope of his experiments and the inferences he deduced from them. As the result of physiological experiment and pathological investigation, we now know that a large portion of the surface of the brain is essentially a sensory-motor mechanism, definite portions of the brain substance emitting the impulses that prompt definite groups of muscles to movement, and other portions being devoted to the reception of impressions from the several organs of sense. By comparing the effects of cerebral disease in man with those of experiment on lower animals, it has been established that a large portion of the human brain consists of sensory and motor centres precisely analogous to those of apes and other higher vertebrates.

To the surgeon and physician these topographical discoveries in the hitherto dark continent of the brain have already proved of great value. If, as a result of cranial fracture, the internal table of the skull be depressed, or blood effused on the brain; if tumours grow from the intracranial membranes, or within the brain substance itself; or if abscesses form, it has—in consequence of these discoveries in cerebral localization—been found possible in a number of cases to accurately diagnose the seat of the morbid condition, to open the cranium precisely over the spot, and by suitably treating the hidden malady to give temporary or permanent relief. By conducting the operations on antiseptic principles, remarkable success has been obtained in cases which twenty years ago would have been regarded as hopeless.

Now turn with me for a little to the department of the physician. The recent successes of brain surgery sink into comparative insignificance before the triumphs of the physician ministering to minds diseased. No department of curative Medicine has made a greater advance than that concerned with the treatment of

Insanity. Until nearly the close of the last century the unfortunate old delusion that insanity is due to devils or evil spirits was widely prevalent, and the treatment of the insane was cruel and barbarous in the extreme. To William Tuke of York and Pinel of Paris we owe the initiation of the rational and humane treatment of the insane now adopted in every civilized country. William Tuke was not a medical man, but a simple citizen—a kind hearted Quaker—who induced the Society of Friends at York to build an asylum where the insane should be treated on humane principles, and their mode of treatment open to inspection. He began his good work in 1792, two years after the death of John Howard, who had done so much to reform the inhuman treatment of prisoners in the gaols of this country and of other European States.

The causes, symptoms, and treatment of the various forms of insanity have now been studied by many learned specialists, and the successful outcome of their work is, that of the 20,000 cases of insanity annually occurring in the United Kingdom, 40 per cent. are curable, while the remaining 60 per cent. of incurables have their stern lot ameliorated by the resources devised by medical skill and kindly forethought. An asylum for the insane is no longer a sort of gaol with gloomy cells and patients chained to the wall, but a quiet retreat within whose walls the troubled mind

> . . . "May find repose.
> No gloomy vengeance lowers ;
> Soft pity heals its woes."

When we consider that in the United Kingdom alone upwards of 110,000 persons are afflicted with mental disease, we can readily realize how great a service has been rendered to mankind by the adoption of a rational and humane method of treatment.

But the physician has achieved perhaps even greater success in the department of preventive Medicine. Prevention will, indeed; always be better than cure. Better to keep the enemy out of the citadel than rely upon slaying him after he has entered. If the gates are left open by the neglect of sanitary conditions the enemy is sure to enter. It was not until some sixty years ago that the time became ripe for the development of sanitary medicine. The initial step was the Compulsory Registration Act of 1835, by which it became possible to ascertain in a reliable manner the number of deaths at different ages, and from different diseases, occurring annually in the several towns and districts of the country. The high death rate of certain towns at once called attention to the causes on which it depended, and, happily for this country, the late Dr William Farr, a man of great ability, was appointed head of the Statistical Department of the Register Office in London. He prepared a national system of vital statistics which has served as a model for all other countries. In a series of letters on the causes of death in England he urged the necessity for inquiry into the sanitary conditions of towns. At length, in 1844, the Government appointed a Commission to inquire into the subject. The late Duke of Buccleuch was chairman; Sir Lyon Playfair, the late Dr Edwin Chadwick of Leeds, and other eminent men, were members. The Report they issued regarding the sanitary condition of some well-known towns is not pleasant reading, and therefore need not be quoted on this occasion; but it led to the Public Health Act of 1848, giving powers to compel sanitary improvements throughout the country. In the various Medical Schools instruction is now given in the principles and practice of Sanitary Medicine, and now every town and district of the country is in charge of medical men whose sole duty in most cases is the *prevention of disease.* The community owes this great result chiefly to the study of vital statistics by the late Dr Farr, and to the great sagacity of Sir John Simon, Medical Officer of the Privy Council, to Dr George Buchanan of the Local Government Board, and others.

Public Health Reports have shown that the air we breathe has a far greater effect on the health than the water we drink or the food we eat. We can refuse to take water or solid food for a time; we can immediately improve their condition by boiling and cooking, and by other suitable devices; but we are compelled, on pain of death, to breathe at every moment the air around us. The provision of an abundant supply of pure water, the inspection of milk and dairies, of meat and other kinds of food, has been of no small service; but of far greater moment has been the purification of the air in the houses of the poor, in schools, in barracks, and other places where human beings congregate. The sanitary arrangements of houses, and the drainage of towns and villages, have all reference more especially to the maintenance of a healthy atmosphere.

The health of some old towns has been greatly improved by destroying insanitary houses, and running wider streets through parts that were too densely crowded and in need of more air. Few towns have profited more by such changes than the city of Edinburgh. Those who visit the city now for the first time are not aware of the great changes in the unhealthy districts of the older part of the town carried out under the enlightened direction of the late Lord Provost Chambers and his Council. These improvements began in 1867, and if the Registrar-General's Death Return for the preceding year be compared with that for 1890, the diminution of disease is most remarkable. Since 1872 the death-rate in Edinburgh has always been lower than in years previous to that date. Dr Farr in his *Vital Statistics* places the normal annual death-rate at 17 per 1000 of the population. During the ten years from 1865 to 1875, the death-rate of Edinburgh was 26·2 per 1000, while during the succeeding ten years it had fallen to 19·9. During the last six years—1885 to 1890 inclusive—it has fallen to an average of 17·5, and during three of these years it was even below 17 per 1000. This remarkable fall in the death-rate is chiefly due to diminution in the number of deaths from zymotic diseases. Thus in 1866, before the city improvements began and the new water supply was obtained, the deaths from typhus, and typhoid, and scarlet fevers, small-pox and diarrhœa, numbered in all 1584, while last year the total number of deaths from the same diseases was only 182. We therefore owe much to the City Authorities, to the able supervision of the Medical Officer of Health, and to the Sanitary Association. I am not going to make invidious comparisons between the health of this and that of other cities. Much progress has everywhere been made, and although much yet remains to be accomplished in a good many districts, it is permissible to say that the Sanitary Department of State Medicine has in half a century rendered great service to the whole country, and has served as a model for other countries to copy.

Within the last twenty years it has become known that poisons produced by the minute fungi, termed microbes or bacteria, are not unfrequently the cause of disease in man and animals which may assume the dimensions of widespread and deadly epidemics. The leavening of bread, the ripening of cheese, the souring of milk, the putrescence of meat, and a number of diseases such as diphtheria and cholera, typhoid and splenic fevers, and probably also measles, scarlatina, and small-pox, are due to microbes, so is leprosy, tuberculosis, tetanus, and probably hydrophobia, and some other affections. When life comes to a close the microbes that induce putrefactive change soon make their appearance, and like a host of invisible vultures break up the complex bodily system, and effect its gradual dissolution. All these remarkable results are produced by minute protoplasmic specks, invisible save with high powers of the microscope. They were discovered by Leeuwenhoeck two centuries ago, and Linnæus the botanist shortly afterwards suggested that they are probably the cause of fermentation and putrefaction, acute fevers and eruptic disease. It was impossible to test the value of that idea by suitable research until medical science had made many other advances. Although the theory was continually kept in view, it was not until Pasteur began his research on fermentation, and on the disease of silk worms, that bacteriology began seriously to attract the attention of many able researchers to whom we owe the great mass of facts that have rendered it one of the most elaborate departments of pathology.

When the albuminous constituents of our food are brought under the influence of certain ferments *poisons* can be produced. The deleterious qualities of stale fish, mussels, crabs, sausages, and such like, are now known to be due to poisons produced from albuminous matter by the agency of putrefactive microbes. In like manner, some microbes that find entrance to the juices and tissues of the living body can produce poisons that may have a fatal effect upon the individual. They may produce within their own protoplasm poisonous alkaloids analogous to those produced by some mushrooms and other poisonous plants; or they may, by fermentative action, produce poisonous globulins and albumoses from the albuminous constituents of the fluids and tissues in which they grow. Thus, Pasteur in his research on the microbe that induces cholera in fowls, discovered that after cultivating the microbe in soup, he could kill the microbe without destroying the poisonous character of its products, which were still able to produce the symptoms of cholera when injected into fowls. That important observation showed that a fluid in which the microbes of disease had grown might still be capable of producing, at all events, the poisonous symptoms of the disease, although the living microbe was no longer there. The same has been proved regarding the microbes of typhoid fever, tetanus, diphtheria, and cholera, and the therapeutist will, no doubt, in the future search for antidotes for the several poisons produced by the microbes in such diseases, so that their deadly effects may be antagonised, while the microbes succumb from other causes.

The researches of the bacteriologist have given a new impetus to preventive Medicine. The necessity for pure water and milk, pure air and cleanliness, has received new emphasis, and the important subject of vaccination has started into greater prominence. It is an old observation that diseases of the zymotic type are not very apt to attack the same person a second time. It was long ago discovered in the East, that if the small-pox virus is introduced under the skin, the disease runs a much milder course than it does if the virus enter in the usual way by mucous membranes, and that the milder disease may procure immunity from further attack. But a far greater service was rendered to mankind when Jenner made the great discovery, that if the human subject is inoculated with virus taken from the cow, immunity from small-pox may be gained by a comparatively trivial affection, or if the vaccinated person is afterwards seized with small-pox the disease is milder and its mortality far less. The statistics of small-pox hospitals show a death-rate of only 6 per cent. in cases of small-pox amongst the vaccinated, but a mortality of from 40 to 60 per cent. amongst the unvaccinated. Although for several reasons it is difficult to get at reliable statistics on this question, there need be no doubt of the great value of vaccination as a preventive measure.

To the bacteriologist Jenner's discovery has been of fundamental importance. The theory commonly entertained regarding cow-pox is that it is a mild form of small-pox, the virus being weakened by growing in the tissue juices of that animal, but in its weakened state still capable of giving the human subject immunity from small-pox. Since it was proved that zymotic diseases result from microbes there has been eager search for the means of altering the character of the microbes and their products, so that immunity may be gained by inoculation with a weakened virus. Working on this line Professor Greenfield discovered in 1880, that by cultivating the microbes of anthrax in aqueous humour from the eye of an ox for a sufficiently long time, they become so modified that when injected into animals liable to splenic fever they produced a mild type of the disease, and when the cultivation in the same fluid had been continued through many generations of the microbe it lost its power of producing disease. At a later date Pasteur discovered that by simply cultivating the microbe of anthrax at a temperature 7° to 15° Fahr. above that of the blood, it no longer produces in animals the deadly form of splenic fever, but a comparatively mild type which, however, serves to render the animal immune to the graver form. Along the same line Pasteur made his great discovery of the method by which the virus of hydrophobia can be weakened by cultivation in the rabbit and otherwise, and of the manner in which that terrible disease may be, so to speak, baffled by repeated inoculations of the weaker virus before the more deadly virus has had time to develop. How an attack even of a mild form of zymotic disease procures partial or complete immunity from a subsequent attack will no doubt puzzle the pathologist for a long time; but at all events bacteriology has already rendered signal service to practical Medicine, and has stimulated the mind to deeper and deeper thought regarding the hidden problems of disease.

The somewhat extended reference I have made to preventive Medicine compels me to say briefly, that therapeutics, though ever beset with great difficulty, makes sure advance. The old error that a knowledge of the actions of drugs is only to be gained by observing how they act in disease, is now exploded. A whole department of physiological pharmacology has sprung up in which the physiological actions of drugs are studied as a necessary preliminary to the right understanding of their therapeutical effects. The number of useful remedies is now very considerable, and the activity of the chemist is likely to increase their number indefinitely, so that in time the physician will scarcely be able to keep himself in touch with all the resources at his command. The advancement of therapeutics and the ever deepening knowledge of disease has enabled the physician of late years to lessen suffering and ward off danger in a number of maladies, and more especially to ameliorate the lot of those who have fallen victims to tedious and incurable disease, such as affections of the heart and others.

But although medical science has advanced so rapidly in a century, and although great progress is yet to be made, too much must not be expected from the resources of medicine. The phenomena of life in health and disease depend on intricate causes which science will never be able completely to fathom. No power of science can alter the fixed law of Nature by which every living bodily system must in due time dissolve and disappear. The highest aim of Medicine can only be to prevent or ameliorate its troubles, and lengthen life to the normal span. No one would thank the physician if he discovered an *elixir vitæ* that would enable a man to live for centuries. He is tired enough of this world by the end of ninety or a hundred years, and if he lived much longer he would find himself a good deal in the way of the on-coming stream of younger life. The continual renovation of life by the succession of new individuals has enabled living Nature slowly to rise to higher and higher attainments in obedience to the Creator's great plan, so that at length his creatures have been empowered to search out the secrets of Nature, and to discover with the help of science how greatly the scope and plan of creation transcends the conceptions of a pre-scientific age.

It must be admitted that the revelations of science are not in harmony with some ideas formulated in pre-scientific times; but the height, and the depth, and the breadth of God's truth has been shown to be far greater than it entered into men's minds to conceive in the earlier ages. But in searching after truth in the light of science, we all of us—the oldest as well as the youngest graduate here present—require to keep humility ever before our minds. We are too apt to mistake the apparent for the real, to forget that we look at Nature in the mirror of our own minds, and seeing her thus dimly, we cannot with our limited powers know the ultimate truth; therefore the question, "What is truth?" will never cease to be asked. The struggle for existence in the world of ideas is as keen as amidst the forms of life. The fittest idea will in the end survive, although it may require centuries to exterminate the weeds of error. In the history of Medicine there have been many errors; it required centuries to exterminate the errors of Galen; there are doubtless many errors to-day.

Graduates in Medicine, you have to-day buckled on your full armour, you will not fail to serve your day and generation in whatever lands your lot may fall. You are all proved men, and we know that you will not fail to bring all the resources of Medicine even to the poorest in the land; that you will do your best to help onward the cause of medical science, and to sustain the reputation of your Alma Mater, in whose name I bid all graduates of to-day a hearty farewell.

II.—THREE CASES OF RUPTURE OF THE UTERUS, ONE OF WHICH WAS SUCCESSFULLY TREATED BY LAPAROTOMY.

By Dr Charles E. Underhill, M.B., F.R.C.P. Ed.

(*Read before the Obstetrical Society of Edinburgh*, 8*th July* 1891.)

It has been my misfortune to meet with three cases of ruptured uterus during my two last periods of service at the Royal Maternity, the accident having happened in each case before they came under my notice. Two of these were treated unsuccessfully by delivering the child through the rent, indeed, the first was hopeless from the beginning; the third was saved by a timely laparotomy. The history of the cases is as follows:—

Case I.—Mrs H., aged 38, was brought to the Hospital from Leith in the forenoon of February 25, 1889. She had had eight previous labours at the full time—the first and seventh having been forceps cases, while the remaining six had terminated without assistance. She was a large, heavy woman, with a big pendulous belly, and had enjoyed good health during her pregnancy, which had reached the full time. We were told that the waters had begun to dribble away on the previous evening (24th), and at 3 A.M. (25th) they had come away with a rush, and strong labour pains had come on. At 5 A.M. she was seen by a midwife, not connected with the Hospital, who said that the os was high up, and at that time about the size of a florin—the presenting part being the head. The patient complained at intervals of suffocating feelings in the chest; but the pains continued strong, and no effort was made to support the pendulous belly. At 6 A.M. ergot was administered by the midwife, as the labour was not advancing, and this was followed by an increase in the force and frequency of the pains. At 7.30 they suddenly ceased, and she complained of feeling great soreness in the abdomen. Dr Butchart of Leith was called in, who, from palpation of the abdomen, suspected twins. On vaginal examination, he felt a soft mass resembling the scrotum projecting from the cervix. A little blood came away during the examination. She was then sent to the Hospital. She lost much blood before leaving home and in the cab on the way. On admission, she was nearly pulseless, and her feet, legs, and arms were cold. Some blood was trickling from the vagina. I saw her first at noon with Dr Barbour, and on palpation made out the outline of the child clearly through the abdominal wall. I thought I could feel the head of a second child, but this turned out to be the contracted body of the uterus. On passing a hand into the vagina the placenta was felt half protruding from and grasped by a tightly contracted internal os. Behind the os and placenta the hand passed through a wide rent into the abdominal cavity, and I felt the child lying across the abdomen, the head being on the right side. As the tear was already so large, I seized the feet and with little difficulty delivered the child, which was dead. It weighed 9 lbs. 2 oz. The placenta was easily removed from the uterus. I had felt the latter as a hard ball lying low down and to the left side—the fundus being directed forwards.

When I first saw her the patient was almost pulseless, but the heart could be felt beating at about 100 per minute. Her lips were dark red, the eyelids bloodless, the abdominal veins remarkably distended, and the surface a grayish blue; she was quite conscious. So far the proceedings had not taken much time, and little blood had been lost externally. Ether injections were given, and the abdomen was douched with hot boiled water (120° F.), which brought away a quantity of clots. Dark venous blood continued to flow, and she showed signs of great exhaustion. On consultation with Dr Croom, abdominal section having been considered and abandoned, the rent and the vagina were packed with long strips of iodoform gauze fastened in lengths of five or six yards. There was no more hæmorrhage externally, but the patient sank exhausted two hours later.

I believe the death of this woman was due principally to the fatal administration of ergot when the os was not fully dilated, and the belly was unusually pendulous. She was in a hopeless condition when we first saw her, and I do not think any other treatment could have prevented the fatal issue.[1]

Case II.—Mrs M., aged 33, has been married nine years, and has six children; expected her seventh confinement in April 1890, but went into May. After a long first stage the membranes ruptured at noon on May 13th. Assistance was sent for soon after, but the student in charge of the case could not make out the presentation. Dr A. L. Gillespie saw her later, and found the head lying in the left iliac region, slightly movable. No presenting part could be recognised by the finger, but on passing the whole hand into the vagina, a shoulder was made out very high up, with a tear in the lower uterine segment, through which some of the small intestines were protruding. I saw the case shortly afterwards with Dr Milne Murray; and as laparotomy in the close, miserable room she was lying in at the bottom of the Canongate was out of the question, and it seemed to me at the time that she would not bear the additional shock of removal to the Maternity, I introduced my hand through the rent, and with difficulty removed the fœtus and placenta; the uterus contracted well. On examination afterwards the tear seemed to take up fully two-thirds or more of the lower uterine segment, and was in the usual transverse direction. The vagina and uterus were douched with weak corrosive solution, and several injections of ether given. The child was large, and weighed over eleven pounds; the head presented a slight degree of hydrocephalus. After delivery the patient was much collapsed, and I left the house fully expecting that she could not live many hours. Next day she rallied, and for the first three days she seemed likely to recover. The abdomen began then to swell greatly, and she died during the night of the 19th of septic peritonitis. No post-mortem could be obtained.

---

[1] A further account of this case, with the post-mortem appearances, will be found in the *Edinburgh Obstetrical Transactions*, vol. xiv. p. 145, where it forms part of the Annual Maternity Report.

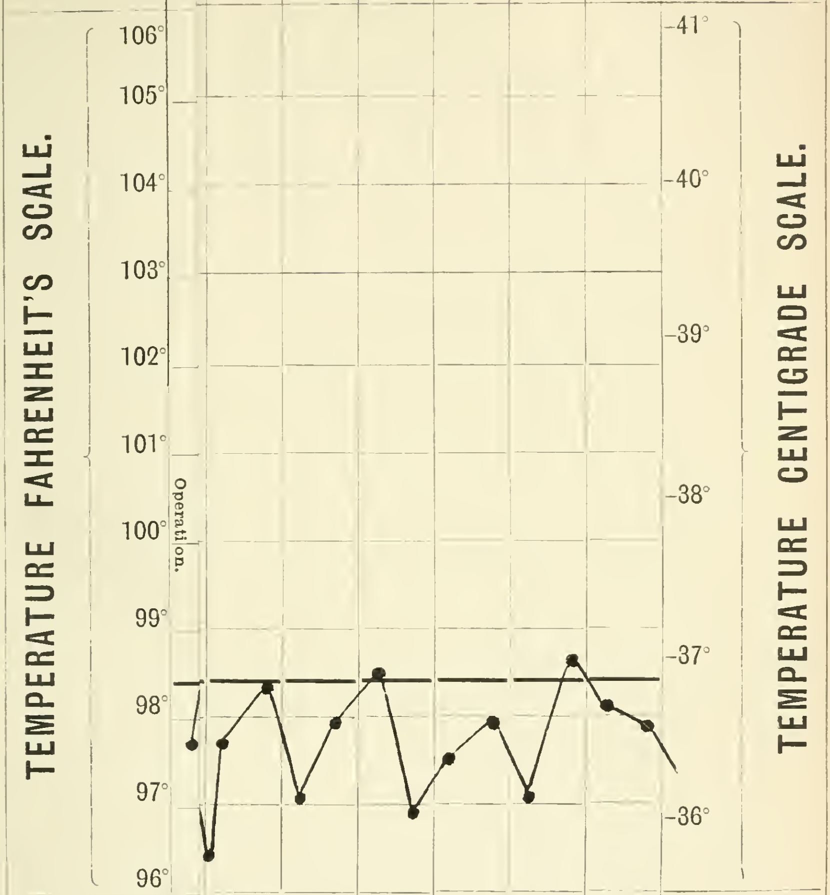
The unfortunate issue of these two cases, especially the latter, which I now think might possibly have been avoided by a laparotomy had it been possible to do it where she was, made me determine that if I ever came across another ruptured uterus, I would give the patient the chance which an operation affords. A month later the opportunity presented itself.

Case III.—Georgina P., aged 28, was admitted to the Maternity for her third confinement at midnight on June 19, 1890. She was a pale, cadaverous, miserable-looking creature, who looked more like 50 than 28, and she told us that her first pregnancy and labour were natural, but that during the second pregnancy she suffered greatly from ill-health, particularly from pains in her back and legs. During one or other of her labours, probably the second, though we could not get any distinct account of it from her, the perineum has been torn through the anus about an inch up the rectum. No attempt had been made to cure this condition, and she was herself unaware of it, and suffered no inconvenience except for some degree of prolapse of the bladder. Since her second confinement, thirteen months ago, she had looked very ill and old.

On admission she stated that she had been washing until 8 P.M., when some water began to come away, and the pains set in about 11. When first seen by the resident physician on duty, Dr Dawson Turner, the cord was found hanging out of the vagina, pulsating feebly, while a head was felt in the pelvis, with a hand lying beside it. The fœtal heart could be heard near the umbilicus. The hand was easily replaced above the head, as was the cord, though with more difficulty. About an hour later the cord came down again, no longer pulsating, nor could the fœtal heart any longer be heard. The hand remained above the head. As the child was evidently dead, and the pains were neither frequent nor strong, the patient was left alone. Towards morning she said that she had had some stronger pains for a short time, and that during these she had felt something give way inside her, without causing her any particular pain. On again examining her, no presenting part could now be felt, the head having receded.

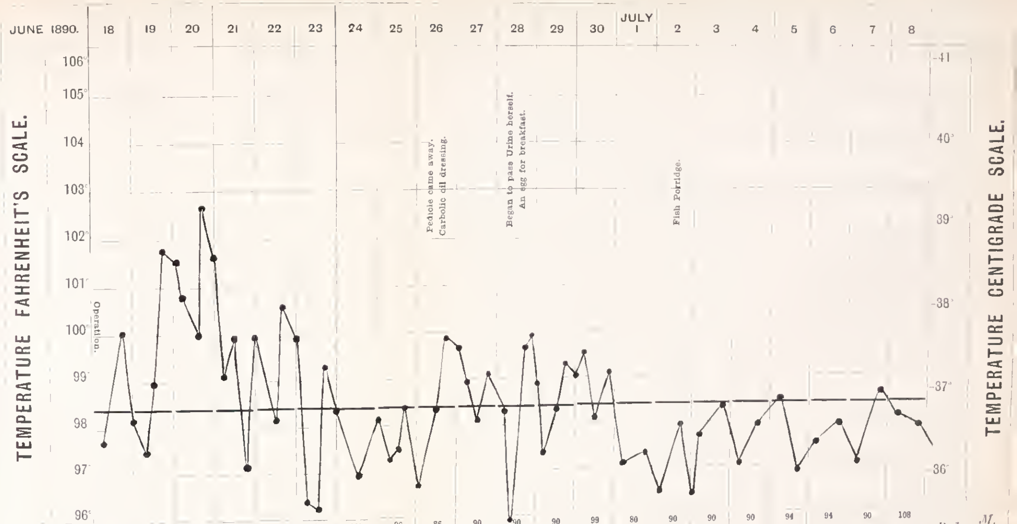
I was now sent for, and on arrival found her looking very haggard and ill, but not complaining of pain, and not greatly

Nam Uterus. *Result—Recovery.*



JUNE 1890.		3	4	5	6	7	8	
Pulse, M.		90	90	94	94	90	108	*Pulse, M.*
E.		86	80	80	98	95	90	*E.*
Resp., M.								*Resp., M.*
E.								*E.*
Motions.			1			11	1	*Motions.*
Urine, ozs.								*Urine, ozs.*
Sp. Gr.								*Sp. Gr.*
Reaction.								*Reaction.*
Chlorides.								*Chlorides.*
Albumen.								*Albumen.*
Day of Dis.		15	16	17	18	19	20	*Day of Dis.*

Name—G. Pettigrew. *Age 28.* *Disease—Rupture of Uterus.* *Result—Recovery.*



	18	19	20	21	22	23	24	25	26	27	28	29	30	July 1	2	3	4	5	6	7	8
Pulse, M.		130 110	120 136	140 124	128 110	120	110	96	86	90	90	90	99	80	90	90	90	94	94	90	108
Pulse, E.	122 126	140 120	144 130	130	126	116	90	90	100	100	100	98	80	88	90	86	80	80	96	95	90
Resp., M.																					
Resp., E.																					
Motions.			1 1		1		3	1	3	1				2 c o.			1			11	1
Urine, ozs.																					
Sp. Gr.		1020		1025		1015		1018													
Reaction.		Acid		Acid		Acid		Acid													
Chlorides.																					
Albumen.						Trace		Trace													
Day of Dis.		1	2	3	4	5	6	Indican	8	9	10	11	12	13	14	15	16	17	18	19	20

collapsed. The outline of the child could be distinctly felt through the abdominal wall. The symphysis pubis appeared to be beaked anteriorly, and the right anterior spine of the ilium was thickened and rounded into a confused mass of bone, but was not sufficiently large to in any way diminish the inlet of the pelvis. *Per vaginam* no presenting part could be felt. Chloroform was given, and passing my left hand into the vagina I found the os and a ring of cervix entire. Beyond this the hand passed into the abdominal cavity through a large tear in the body and cervix of the uterus. The body of the uterus was firmly contracted, and lying in the right iliac fossa; the fœtus and placenta were among the intestines; a loop of the cord, cold and pulseless, was lying in the vagina and protruding from it.

I sent for Professor Simpson and Dr Milne Murray, and with their concurrence and assistance I proceeded to open the abdomen. The abdominal walls were very thin, and there was no bleeding from the incision, which extended from the umbilicus to one inch above the pubes. On opening the peritoneum the uterus was seen lying on the right side in the position described. Just behind and to the left of it lay the placenta, which had been entirely thrown off from the uterine cavity. This was removed first. The fœtus was next seized by the feet and taken out. A large quantity of bloody serum and fluid blood welled out as soon as the peritoneum was incised. The uterus was next brought outside and the tear carefully examined. It extended from a little below the level of the left round ligament deep down into the cervix. It was obviously useless to sew it up and leave the uterus within the abdomen, so we determined to remove it. The method adopted was that devised by Mr Lawson Tait for the performance of Porro's operation, which for simplicity and ease of execution cannot be surpassed. We met with a difficulty, however, as the constricting rubber tube could not be fixed low enough on the cervix to include the whole of the tear. I therefore put three or four catgut stitches into the lowest part of the tear in the cervix, and having brought the edges together firmly, passed the loop of thick rubber tubing round the cervix at as low a level as possible. This was then forcibly drawn very tight and tied in a double knot. Through the tube and the cervix two knitting-needles were easily passed, at right angles to one another, to form a support for the stump. The ends of the needles having been sheathed with pieces of the tube, as a protection to the skin, the uterus was cut off with scissors and a nearly dry stump was left. No blood whatever came from it, and only a little venous blood came from the sinuses when the uterus was being separated. The toilet of the peritoneum was made with great care. After repeated douchings with hot water, previously boiled, which brought away much clot, meconium, and vernix caseosa, the whole surface was diligently sponged. This care was rewarded by the removal of a mass of meconium from the pouch of peritoneum high up under the liver, and a good deal also from the pouch of Douglas. One vessel in the cervix below the ligature required to be tied. The abdominal wound was sewed with silk sutures and the stump dressed with dried sulphate of iron,—the whole wound being well powdered with iodoform. Some corrosive wool and a flannel bandage completed the dressing.

On being removed to bed the patient was cold and feeble, and for a time very restless, and I had at that time very faint hopes of her recovery. She was ordered and retained an enema of Valentine's beef-juice and whisky, to be repeated in four hours.

The progress of the case subsequently was on the whole satisfactory. On the third day the temperature rose to 102°·8 and the pulse to 140. Next day the temperature fell below 100°; and though on several occasions afterwards it reached 100°, it was never above it. Several times it fell below 97°. On the seventh day the pulse fell to 100, and did not rise above it afterwards. The stitches were removed on the fifth day, and on the ninth day the stump came away, leaving a deep hole, which was douched with corrosive lotion and dressed with iodoform twice daily. At the end of four weeks she was allowed to get up, and soon after left the Maternity, looking twenty years younger than when she came in. The fœtus weighed 6 lbs. 6 oz. The right hand was swollen, and there was a distinct caput succedaneum over the posterior fontanelle.

I saw her again on November 29, looking fat and well. There was no depression in the position of the stump, and no ventral hernia. Vaginal examination showed the os as a mere button, still slightly patulous. It was not fixed, and there was no thickening, pain, or tenderness anywhere. I did not make out any decided contraction of the pelvis in any diameter. She then, as before, declined any interference with the torn perineum, as it gave her no trouble.

I should like to add, that I owe my hearty thanks to Professor Simpson, whose invaluable assistance went a great way to making the operation a success, and to Dr Milne Murray for the care he took of the patient afterwards.

In this case the operation performed was that first used by Prevôt of Moscow in 1878. In a paper by Coe,[1] giving an account of a successful case of his own, a table drawn up by himself and Dr Harris of Philadelphia is given, containing a record of fourteen cases, five of which recovered and nine died. In my case we adopted a slight innovation, which was made necessary by the deep extent of the tear into the cervix,—viz., we sewed up the lowest part of the tear to the extent of about an inch and a half, and were thus enabled to put the rubber constrictor upon a practically closed tube. The tear itself was almost directly vertical, and this fact, no doubt, made the operation easier than it would have been had the tear been in the more usual transverse direction, and thus gave the woman a better chance.

---

[1] "A Successful Case of Laparotomy and Supra-Vaginal Amputation of the Uterus for Rupture," by Henry C. Coe, M.D., M.R.C.S., *New York Medical Record,* November 2, 1889.

The experience of these cases has convinced me that, even in circumstances apparently most desperate, a woman with a ruptured uterus, and a fœtus which has wholly or partially escaped into the peritoneum, has a better chance of recovery by the operation of laparotomy than by any other mode of treatment; and I only regret that this was not carried out in Case II. When the fœtus and placenta have been already delivered *per vias naturales,* without having been in the peritoneal cavity at all, and a tear is then discovered, the case stands upon a different footing; and complete rest, with careful disinfection, is probably the most likely plan to pursue. It was so in a case which I came across soon after I graduated. A woman with a narrow pelvis had been delivered with great difficulty by forceps, and after delivery a tear in the lower uterine segment was discovered, through which some loops of intestine protruded into the vagina. The case was left alone and the woman recovered, and I subsequently delivered her without any accident by inducing premature labour at the seventh month. As regards the question whether the torn uterus should be sewn up and left *in situ* or removed *en masse,* I have no doubt whatever that the latter is the proper proceeding to adopt. To leave a contused and lacerated uterus, however carefully sewn, within the abdominal cavity, is to expose the woman to a most serious additional risk.

III.—ON THE DILATATION OF THE ANUS AND URETHRA RESULTING FROM NATURAL LABOUR.

By D. Berry Hart, M.D., F.R.C.P.E., F.R.S.E., President, Edinburgh Obstetrical Society; Lecturer on Midwifery and Diseases of Women, Surgeons' Hall, Edinburgh; Physician, Royal Maternity and Simpson Memorial Hospital; Assistant Gynæcological Physician, Royal Infirmary, Edinburgh.

(*Read before the Edinburgh Obstetrical Society,* 10*th June* 1891.)

The brilliant and accurate results obtained in pregnancy and labour from frozen sectional anatomy have somewhat overshadowed those gained by clinical investigation. In reality, however, this anatomical research should give a greater impetus to clinical work, as it has enabled us to correct clinical data, to allow for unavoidable errors, and, finally, to extend the necessarily narrow scope of the view given by sections of a frozen cadaver. In a clinical investigation based on accurate measurement we can obtain a picture of consecutive phenomena, whereas the view given by a section is necessarily a picture of only one phase,—undeniably accurate and precise to a degree unattainable by clinical work, but yet limited in its scope. These two methods, and others based on them, must, in fact, go hand in hand. Each has its special value, its special defect, and we must supplement and correct them by careful combination.

To-night I wish to make a short clinical contribution to phenomena well known but not yet accurately described. The changes in the anus when the head is passing the perineum are well known to all, while less known is the dilatation the urethra is subjected to during labour. We have no accurate account of them, and no precise sketch. I thought it would be of value to know the maximum distension of the anus and urethra during labour as a preliminary to some more extended observations. The measurements seemed to me little open to fallacy, and likely to be easily made. In addition, I believed that photographs might be obtained of the perineum in its various degrees of distension, and in this way a permanent record obtained of some of its changes. It was necessary that all this should be carried out in the Maternity Hospital by the Residents, with a certain amount of suggestion and supervision on my part. I am strongly of opinion that much valuable clinical observation could be made by the Maternity Residents, with great profit to obstetric science, to say nothing of the valuable and exact training gained by them personally. I was fortunate in having the measurements made by my Residents of 1890, Drs Marshall and Alexander. I am specially indebted to them for their zeal and accuracy, and take this opportunity of thanking them for the extra night-work they so cheerfully undertook. The photographic work was done by a former Resident, Dr Melville, to my entire satisfaction; and I have also to thank him for the intelligence and care he took in this matter.

The method employed was as follows:—The anus was measured, at the time of its apparent greatest distension, in two diameters—antero-posterior and transverse. Its shape was noted, photographs of typical cases taken, and the general features of the various changes noted.

The urethral measurements were more difficult to make, so as to avoid fallacy. It was evident that measurements might estimate the maximum distensibility of the urethra more than its normal dilatability. The following plan was adopted to avoid error as much as possible, as well as because it insured against risk of sepsis to the bladder. Hegar's dilators were taken, and at the end of pregnancy that one passed which seemed to measure its ordinary stretching point. The first one tried was always a large one, not likely to pass, and then successive lower diameters employed, until the one that was chosen fitted. As Hegar's dilators are numbered according to their diameter in millimetres ($\frac{1}{25}''$), they were for this reason specially convenient. I am well aware that this method is not by any means accurate, but, as we shall see, it gave approximately correct results.

The same measurement was taken at the end of labour and on the tenth day of the puerperium. The last were made by our excellent staff-nurse, Mrs Hall.

The anal measurements were made on twenty-one cases, of whom sixteen were primiparæ. The average maximum antero-posterior was an inch ($2\frac{1}{2}$ cms.) as nearly as may be, while the average maximum transverse was slightly over the inch ($1\frac{5}{16}''$). The shape of the distended anus was, however, not circular, but that of a reversed D, the vertical limb being forward so, ᗡ.

The greatest distension is antero-posteriorly, when the head is entering on the perineum (the Einschneidung of the Germans), while the transverse is greatest when the head is passing (Durchschneidung). Some unimportant variations in shape need not be noted. In one case a photograph was obtained at the moment when the child's nose had passed, and the anus is then a transverse slit. (*Vide* first table.)

The next table gives the results of the urethral measurements. The initial calibre at end of pregnancy was that of a dilator whose diameter lay between 6 and 8 mm. After the third stage the dilatability varied between 9 and 12 mm., the average increase being almost exactly 3 to 4 mm. On the tenth day of the puerperium the calibre was usually 1 millimetre above the one at the end of pregnancy.

I have now finally to consider the mechanism of these changes and their physiological and pathological bearings, if any. The anus is normally a closed slit passing through the pelvic floor nearly at right angles to the long axis of the vagina, and it is so closed that we have its short lateral walls in apposition (Symington), and the external aperture a very short sagittal mesial line.

When the head is entering on the perineum we get a transverse stretching of the perineum, the well-known convex bulging, and also an elongation and driving back. The part of the sacral segment in front and inclusive of the anterior rectal wall is elongated and driven forward more markedly than that behind, and thus we get the anus converted into a flattened ring, through which the anterior rectal wall is seen. The anus is, therefore, altered into the ᗡ shape already given. The greatest distension is found when the broad occiput is passing the anus; but when the occiput has passed and is emerging, the narrower sinciput, and the fact that the occiput is now elongating the hymen and vulva, expose the anus to less tension and give a lessened transverse, and especially a smaller antero-posterior diameter.

The stretching the anus undergoes at this time sometimes causes fissure, but it is rare to find fissure remaining as a condition requiring operation. This is apparently prevented by the stretching of the sphincter, which, as we know, is the cure for fissure of the anus and its intense pain, *i.e.*, the stretching of the anus during labour will cure fissure if it causes it.

The urethra, like the anus, is a closed muscular slit. The exact relations of the walls are disputed, and need not detain us at present. That the urethra becomes distended or permeable to an instrument of larger calibre is known to many, I have no doubt, inasmuch as I have known of the finger passed into the bladder inadvertently after labour, and also the vaginal tube of the douche inserted, and the bladder distended instead of the vagina washed out.

The measurements made in the second table show a distinct increase in the capacity of the urethra for distension. This, so far as one could judge, chiefly affects its lower part; but the exact length of this portion was not ascertained, and would be difficult to estimate clinically. The cause of this increased capacity for distension is evidently the transverse stretching of the vagina by the occiput. The close blending of urethra and vagina makes the urethra participate in this vaginal distension, and explains the condition of greater dilatability after labour. The urethra is apparently not elongated in its long axis during labour, as we learn from sectional anatomy.

In conclusion, I would urge that an investigation on frozen puerperal sections as to the amount of urethral, bladder, and rectal stretching would be of value. The inquiry would be of value in relation to the retention of urine after labour. As a matter of fact, we may have paresis of the bladder in the puerperium causing retention if there is any urethral spasm from vaginal, perineal, or vestibular lacerations. Where there is no laceration the paresis of the bladder may be counterbalanced by the diminished urethral resistance brought about by its stretching. These factors have been entirely overlooked hitherto, but evidently must be accounted for and given their right place in estimating the causation of these conditions.

No.	Para.	Antero-posteriorly.	Transversely or Laterally.	No.	Para.	Antero-posteriorly.	Transversely or Laterally.
1	i.	1 inch	1½ inch	13	i.	2 inch	1½ inch
2	i.	1 "	1⅛ "	14	i.	1⅛ "	1 "
3	i.	¾ "	1 "	15	i.	1⅝ "	1⅜ "
4	i.	1 "	1¼ "	16	i.	1 "	⅜ "
5	i.	½ "	1⅛ "	17	ii.	½ "	1⅛ "
6	i.	¾ "	1 "	18	ii.	1¼ "	1 "
7	i.	1 "	1⅛ "	19	v.	¾ "	1¼ "
8	i.	¾ "	1⅛ "	20	vi.	¾ "	1 "
9	i.	½ "	1⅛ "	21	ix.	1 "	1 "
10	i.	⅝ "	1¼ "			20⅝ inches	22⅞ inches
11	i.	1¼ "	⅞ "				
12	i.	1½ "	¾ "			1 inch	

No.	Para.	Before Parturition.	After 3rd Stage.	End of Stay in Hospital.		Remarks.
				No.	Day.	
1	i.	6 *Hegar*	10	7	11th	
2	i.	6 „	9	7	10th	
3	i.	?	8	8	10th	In 2nd stage when admitted.
4	i.	6 „	10	7	13th	
5	i.	7 „	10			
6	i.	7 „	10	6	16th	
7	i.	7 „	10	7	10th	
8	i.	7 „	10	8	13th	
9	i.	7 „	10	7	12th	
10	i.	7 „	9	6	9th	
11	i.	8 „	11	8	11th	
12	i.	8 „	9	6	10th	
13	i.	8 „	11			
14	i.	8 „	10			
15	i.	9 „	12			
16	ii.	7 „	10	10	20th	
17	ii.	7 „	9	8	10th	
18	ii.	8 „	11	8	10th	
19	ii.	8 „	11	8	10th	
20	ii.	8 „	10	8	10th	
21	ii.	8 „	10	7	10th	
22	ii.	8 „	10	7	10th	
23	iii.	8 „	10	7	10th	

IV.—NOTE OF A CASE OF PORRO-CÆSAREAN SECTION.

By N. T. Brewis, M.B., F.R.C.P.E., Lecturer on Gynæcology, Edinburgh Medical School; Gynæcologist, New Town Dispensary; Secretary, Edinburgh Obstetrical Society.

(*Read before the Edinburgh Obstetrical Society,* 10*th June* 1891.)

On 30th July 1888 I delivered Mrs D. of her first child by basilysis. Her medical attendant, before sending for me, had failed to move the head with long forceps, and I was equally unsuccessful with axis-traction. The patient was of small stature, her pelvis equally contracted, and the head, which occupied the left occipito anterior position, could not, as was evident from the strong traction which we had exerted, be drawn through the brim unless its size were diminished. Accordingly, at the doctor's request, I broke up the base with Professor Simpson's basilyst and extracted with the blunt hook. The child was a fully-developed, well-nourished one, with average head and other measurements. The mother made a good recovery.

About six months ago Mrs D. visited me to announce that she was again pregnant. With Dr Clark's assistance, I carefully measured the pelvis, getting the following result:—The intercristal diameter was found to be 7½ inches, the interspinous 9 inches, the external conjugate 7 inches, and the diagonal conjugate 3¼ inches, giving an approximate true conjugate of 2½–2¾ inches.

With these measurements before us, we advised our patient to have labour induced at the seventh month. To this she consented, but as the time drew near she changed her mind in favour of Cæsarean section, giving as her reason that she preferred to undergo the major operation if it gave her a better chance of having a living child.

It having been fixed that the child was to be delivered through the abdomen, the form of Cæsarean section had next to be settled. At first Mrs D. expressed herself as desirous that the operation should not preclude her from having more children. We accordingly arranged that ordinary Cæsarean section should be performed. She, however, through the solicitation of her friends, altered her resolve in regard to this, and decided to have an operation which would prevent the recurrence of pregnancy. I therefore recommended Porro-Cæsarean section. When a patient wishes to be rendered sterile, this operation is, I think, preferable to the method of Cæsarean section with tying of Fallopian tubes, practised by Dr Murdoch Cameron. It is easier, can be done quicker, and the results are as satisfactory.

The operation was performed on 24th May, a few days before the expected onset of labour. On abdominal palpation, the child was found to be lying with its back to the left and front of the mother. The head was free above the brim, with the occiput to the left. The point of maximum intensity of the fœtal heart was found in the middle of a line joining the umbilicus and left anterior superior iliac spine. Dr Macdonald kindly administered chloroform, Dr Clark assisted me, and Dr James Smith received and took charge of the baby. The incision, about 5 inches in length, was made in the middle line between the umbilicus and symphysis pubis. The walls were thin and there was little bleeding from them. The uterus, when exposed, presented a dark blue appearance, suggestive of placenta lying underneath. An incision was made through the whole depth of the anterior uterine wall, in length corresponding to the external wound; the placenta was then exposed attached to the front wall immediately below the incision. With my right hand I quickly detached the placenta, seized the child by the head, and delivered it and placenta at the same moment. While I passed my right hand into the uterus, I slipped my left behind and grasped the cervix with it as the child was being delivered. By this manœuvre the patient lost no more blood than is usual at an ordinary labour, and constriction of the cervix with the elastic ligature was not necessary. My reason for not constricting the cervix beforehand with the elastic ligature was my anxiety to prevent asphyxiation of the child. After the latter was handed to Dr Smith, an elastic cord was tightened round the cervix, tied, and had pins passed through it. The body of the uterus was then cut away, the stump cleaned, the abdominal cavity flushed out with water, and the wound closed in the usual manner.

There was no shock following the operation; the patient when put to bed had a normal temperature and a steady pulse of 80 per minute. Her recovery has been satisfactory, though somewhat complicated by a severe attack of bronchitis. The child, a healthy male of average size, is thriving well.

The elastic tubing made an excellent ligature for the stump: though, from my experience of Koeberle's wire constrictor, I think it is not so good as the latter, in that it prevents the upper part of the margin of the wound from adhering to the pedicle. Tait's modification of Koeberle's instrument is a perfect constrictor, and is the one I shall use in future.

I shall not enter into the question of Cæsarean section *versus* Craniotomy further than to say that, in my opinion, the recognition of the former as the preferable operation is only a matter of time. It is the easier operation, it saves the child, and in the hands of experienced operators its maternal mortality is not greater than that of craniotomy. Before long the morality of Porro's operation will be questioned. The Roman Catholic bishops, I believe, already condemn the operation. The mutilation caused by the operation can in most cases be avoided by adopting Cæsarean section; and the time may come when, with the advance of surgery, one may think no more of sewing a cut uterus than a torn perineum. Then we shall be able to advise our dwarf patients to submit to repeated Cæsarean section, and to assure them that the risk is not much greater than in natural labour. A number of instances of successful repeated Cæsarean sections are already on record, and justify this prediction.

V.—PREMATURE PARTURITION THROUGH REGULATION OF DIET.

By J. W. F. Donath. Translated from the Dutch by John Boyd, M.D., Slamannan.

Whenever text-books are consulted about the attainment of premature births, various methods for that end are prescribed. One plan is dismissed as too painful, another as too tedious, a third again as dangerous, etc. Krause's plan—that of the introduction of an elastic catheter into the uterus between the ovum and the walls of the uterus, and allowing it to remain — was recommended by Schröder, as also by Sänger, as a simple, certain, specially speedy, and harmless method. That this plan in a well-arranged hospital, where all safeguards against possible infection can be applied, may be harmless I do not doubt in the least; but that this means can become dangerous in private practice, I can, alas! furnish an example. The applications which are adopted to procure premature birth are in my opinion to be earnestly handled.

In 1886 I was requested by a woman to procure premature delivery. Her former physician had advised her not to allow her pregnancy to advance further than the seventh or seventh and a half month, in view of her being unable to bear a living child at full term. The first child was very small when born. I found in her case a rachitic, flat, narrowed pelvis, with a conjugata vera of 8 cm. Six weeks before the probable termination of the gestation, I introduced a quite new catheter—boiled in 4 per cent. carbolic solution by myself—between the ovum and the uterus-wall, after the vagina and vulva had been previously cleansed by a warm-water irrigation. Twelve hours after the application of the catheter pains arose, and in twenty-four hours later a living child was born. The sac was broken before birth. For about thirty-six hours my patient continued well; suddenly she took a cold shivering with high temperature, and on the fifth day she sunk from pyæmia.

Reflecting on this tragic event, I felt much averse to resort to the same application in the case of another patient, where the induction of early delivery came into serious consideration. The patient (Mev. J. de V.), a little wee wifie (een klein vrouwtje), 148 cm. long, I had attended in November 1882 at her first confinement, when, after five days in labour, she was delivered of a still-born female child, of about 12 inches, by forceps.[1] In 1884, 1886, and 1888 the patient became gravid, but the pregnancy was in each case successively and spontaneously broken off at the sixth, third, and fourth month. Although the pelvis was not particularly strait (conjugata vera, 11 cm.), I concluded that here the question of *partus prematurus* must be seriously entertained, with an eye to the probability of a large child again being to be brought to light.

I requested Dr Mendes de Leon to see my patient, to investigate the indications, and to take her to his gynæcological clinic for treatment. Dr Mendes de Leon saw her, and found no unusual diminution of pelvis, and was of opinion that a child not too large might well be born at term. He called my attention to the idea of Prochownick, that by a firm regulation of the diet of the mother in the thirty-second or thirty-fourth week of gestation, to modify or rather to oppose the development of the fœtus, that she might safely and with complete viability be delivered at full time. Some patients of Prochownick and Brehm with special narrowing of pelvis, who had before been delivered by perforation or *partus prematurus*, had the good fortune to bring children to the world without medical aid, which, though small, meagre, and feeble, were quite viable. Prochownick prescribed for his patients exactly the same diet that those who are suffering from diabetes mellitus are accustomed to use, *i.e.*, abstention from sugar, amylacea, and fats, and a full diet of flesh meat. Above all, he forbade much use of fluids.

---

[1] Mev. J. de V., like many of her sisters in size, had very probably secured for herself a large husband.—*Translator.*

The last period of my patient returned in December 1889: the probable end of her gestation was thus the first half of September 1890. On the 22nd July, nearly six weeks before the probable accouchement, the patient began the prescribed diet, which she carried out to the last day, only one day excepted. At breakfast she consumed two biscuits and a cup of tea, — the biscuits first without, afterwards with, a little butter. In the forenoon she had also a biscuit and a cup of tea. For dinner at one she had flesh with a little greens, or eggs, or cooked fish. At 7 P.M. she had two biscuits and a cup of tea. She never imbibed more than three glasses of wine per diem. Neither water nor milk did she drink. In the daily programme there was included a walk of at least half an hour.

On the 7th September there occurred a sudden flow of waters, without any other discharge. She slept well that night, and on the 8th rose at her usual time, occupying herself with her ordinary household duties. Meanwhile the waters escaped, and now and then a little pain at the back was felt. At 10·30 P.M. I was called to her, and could find no dilatation of the os uteri. At 12 the pains became stronger; being then sent for, I found the os uteri opened to the size of a dollar, and the position deep in the pelvis. Two hours later a boy of 2430 grammes was expelled, who from his meagreness looked like a miniature old mannie. The child was 42 cm. long; the right and diametric measurement of the head was respectively 10·5 and 8·5 cm. This weak baby was carefully fed with the bottle after Soxhlet's method. In the first week his weight increased but little; but later on he grew more, as the following list demonstrates:—

9th September	1890,	his weight was	2430	grammes.
16th	do.	do.	2220	„
23rd	do.	do.	2450	„
7th Oct.	do.	do.	2490	„
4th Nov.	do.	do.	2980	„
18th	do.	do.	3360	„
2nd Dec.	do.	do.	4150	„
16th	do.	do.	4600	„
14th January	1891,	do.	5800	„
2nd Feb.	do.	do.	6500	„
27th	do.	do.	7500	„

Is this result a consequence of the diet cure of Prochownick? I may not venture to answer the question, but hope afterwards to say that Yes with open mouth will be the response of many of my colleagues, whose attention directed to the above system will experience similarly favourable results. An important indication in the management of *partus prematurus* will thereby become due.

VI.—A CASE OF SPONTANEOUS PNEUMO-THORAX AND PNEUMO-PERICARDIUM.

By R. A. LUNDIE, M.A., M.B., F.R.C.S. Ed., Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh, 3rd June* 1891.)

PNEUMO-PERICARDIUM is such a rare condition, especially when it terminates in recovery, that no excuse is needed for bringing a case of it under the notice of the profession. That which I have to record presents, moreover, some features which, so far as I can discover in the literature of the subject, are absolutely unique.

The patient is a young man, clerk in a lawyer's office, aged 20 at the time of his illness. He is tall and well-made, but rather slim, and has a delicate skin and a pink and white complexion.

Family History.—The patient's parents, brothers, and sisters are alive and well. A few cases of phthisis, however, have occurred both in his father's and his maternal grandfather's family.

Personal History.—When an infant he was rather delicate, being especially liable to eczema behind the ears. When about a year old he had an acute abscess in the front of his neck, and some years later had his left shoulder dislocated. He had measles mildly; possibly scarlet fever; never whooping-cough. When about seven or eight he had symptoms, of which I can get no clear account, that the doctor who was consulted referred to hip-joint disease. The parents, unwilling to have him kept in bed, consulted a bone-setter, who ordered a blister to be applied to the hip. This was done, but in the first instance to the unaffected side; then, when the mistake was discovered, to the other; and he soon recovered. Three or four years before the illness I have to record he had on two occasions severe attacks of pain in the chest—he thinks on the left side—which he describes as quite similar to the pain which accompanied the onset of his pneumo-thorax, except that they only lasted an hour or two at most, and were not attended by the same oppression of breathing. On the day following the second of these attacks he was examined by a medical man, and understood that nothing could be discovered except palpitation. On close questioning, he stated that for two or three years he had had at times a slight cough in the morning, which brought up a spit or two; but he had been free from it for some months before his illness.

Present Attack.—On 28th April 1890, while sitting quietly at home after dinner, he felt a sudden severe pain in the region of the left shoulder-blade, which rapidly spread downwards to the axillary region, and was never again troublesome behind where it began. He had so much breathlessness and distress on the slightest exertion after this that he was forced to lie in bed, but while there felt quite comfortable. That day he had had to carry a number of heavy books at the office, and had also been swinging by his arms from a door, but felt no discomfort at the time.

On 2nd May, four days after the commencement of his illness, I was asked to see him. I found him looking perfectly well, but complaining that he had considerable pain in the left side of the chest, with breathlessness when he moved and when he lay on the left side; also that there was occasionally what he described as a "feeling of trickling" in the left side. Temperature normal; pulse 90, rather weak and compressible.

On examination, there was deficient expansion of the left chest, and the heart impulse could not be felt. On percussion, the whole of the left side was hyperresonant. The border of the hyperresonant area anteriorly passed obliquely downwards and to the right, crossing the middle line about mid-sternum, and lying considerably to the right of it opposite the lower end of the sternum. No heart-dulness could be made out anywhere. There was no change of the quality of the percussion-note in passing across the cardiac area. It was most hyperresonant from the line above described to the mammary and upper part of the axillary regions: at the apex, in the lower part of the axillary region, and posteriorly it was less so, but everywhere much more resonant than on the right side. The breath-sounds were faintly heard in the less resonant areas, but entirely absent in the more resonant. The heart-sounds were faint, but otherwise normal, except when he had the "feeling of trickling" already referred to. During that time only there was a semi-musical accompaniment to the first sound, somewhat suggestive of the sound emitted by an elastic band suddenly stretched. No metallic tinkling was to be heard. There could be no doubt that the case was one of left pneumothorax. The variations in the percussion-note and breath-sounds seemed to indicate that the lung was more or less adherent to the chest wall over a rather extensive area; but the chief peculiarity was the displacement of the heart backwards instead of to the right, of which more in the sequel.

I need not enlarge upon the progress of the case at this stage. Dr Brakenridge kindly examined the patient with me on 5th May, when the condition was much the same as I have described. He remained in bed for a fortnight, his discomfort gradually diminishing *pari passu* with the physical signs, and after ten days more returned to work, apparently quite well. There was never any rise of temperature, nor interference with the appetite or digestion; and never any sign of fluid effusion.

On examining the chest after the symptoms had completely disappeared, I found that the percussion-note in the mammary and axillary regions was still slightly more resonant on the left side. Otherwise the left lung was normal. In the right there was a slightly higher-pitched note on percussion at the apex, both anteriorly and posteriorly; and in the same area there was harsh breathing, with increased vocal fremitus and resonance, but no accompaniments. The heart was normal in position and action, but was not examined with such minuteness as if I had known what was to happen later.

He continued at work till 14th June, when, while walking quietly home from his office, he felt a pain coming on in his left side, rather more gradually than on the last occasion. This time he was not aware of any unusual exertion preceding the attack. Next day, 15th June, he came to see me, and told me that he had a return of his old complaint. He stated that he had pain and discomfort in the left side of the chest, with a sensation of "splashing" there. On examining him hurriedly in a sitting posture, I found that there was not the hyperresonance on the left side which characterized his previous attack, but that the heart impulse in the fourth and fifth interspaces had a peculiar thrilling feeling, and that the heart-sounds were masked by singular irregular semi-musical accompaniments. Temperature normal; pulse 96, regular, weak. I ordered him to go home and stay in bed.

June 16.—Patient still complained of pain in the left side of the chest, aggravated by lying on the left side, and of "splashing" in the left side.

Physical examination revealed the following condition:—

Patient in Dorsal Decubitus.—No heart impulse to be seen or felt. A tympanitic area, very sharply defined, extended vertically from the second left interspace in the parasternal line to meet the stomach note, transversely from one inch to the right of the sternum to the left nipple.

Patient Sitting Up.—Over the lower part of the sternum the tympanitic note was replaced by dulness, and the heart impulse was felt in the dull area.

Patient on Right Side.—From mid-sternum to one inch to the right of the sternum dulness, and the heart impulse was felt in the dull area.

Patient on Left Side.—Dulness and heart impulse appeared within the left mamma.

Or, to sum up, there was a tympanitic area which occupied the position of a slightly enlarged pericardium, and the heart fell to the most dependent portion of it in each position of the patient. The impulse was still thrilling, as on the previous day; most markedly so when the patient was on the left side.

The sounds heard on auscultation were still more remarkable. The heart-sounds were obscured by irregular, tumultuous, tinkling accompaniments, becoming more intense with each systole. These sounds strongly suggested the splashing of a little fluid in a cavity; but their most remarkable character was their intense metallic resonance, which made the "peal of bells" almost a more apt description of them than the "water-wheel." They were most constant and intense when the patient lay on his left side, least so when he lay on his back. In the latter position they were sometimes absent, but when that was the case the heart-sounds had still a ringing metallic timbre. The patient himself was evidently conscious of the movements which produced these sounds—but by feeling, not by hearing. They were loud on auscultation, but could not be heard at a distance from the patient. Slight grating accompaniments were sometimes heard in the dorsal decubitus over the sternum about the level of the third costal cartilage. The left mammary and axillary regions were still a little more resonant on percussion than the right, but sharply contrasted with the tympanitic area over the region of the heart, and there was no evidence to show that there was air in the pleural cavity.

June 17.—Dr Brakenridge kindly saw the patient with me, and confirmed my observations and my diagnosis of pneumo-pericardium. He also pointed out that when the tympanitic area was rapidly percussed the pitch of the note changed slightly with each cardiac cycle. Unfortunately, it was not noticed at which phase it was highest. The patient expressed himself as feeling much better; he had less pain when lying on the left side, none when lying on the back or right side.

June 18.—Tympanitic area much the same, but abnormal sounds much less in volume, and heard only when the patient lay on his left side.

June 19.—Dr G. A. Gibson kindly came to see the patient, but by this time the "splashing" felt by the patient till the previous night had disappeared, and with it the abnormal sounds. There was still more resonance than normal over the cardiac area; but in the dorsal decubitus there was relative dulness at and outside the left edge of the sternum, and the heart impulse could be seen and felt in the fourth left interspace. Dr Gibson pointed out that the stomach was distended, and that splashing could readily be produced in it.

June 24.—Præcordial region still rather more resonant than normal. Patient, feeling perfectly well, was allowed to get up for the first time. During this period, as while the pneumo-thorax was present, there was never any rise of temperature or interference with the general health. The pulse was never irregular in the least.

July 3.—Patient examined with Dr Brakenridge. There was still a little more resonance over the præcordial region than normal. The heart-sounds were normal, except that a faint murmur was heard over the sternum at the level of the third costal cartilage in the upright posture only.

May 25, 1891.—Patient was again seen. He states that he has been perfectly well, with the exception that he has occasionally what he describes as a "painful throbbing" below the left mamma, which he never had before his illness. It never lasts more than a minute, and recurs only at intervals of a week or so. He leads an active life, has been regularly doing his office work, and is now playing cricket each evening.

Physical Examination.—The right apex is in the same condition as previously noted. Resonance is now equal on the two sides at the lower part of the chest. The relative cardiac dulness begins above in the third left interspace in the parasternal line, and extends transversely from half an inch to the right of the sternum to one inch internal to the left mamma. There is no absolute dulness over the heart. The apex-beat is felt in the fifth left interspace. The heart-sounds are normal, except that in the erect posture there is a slight, short, roughish murmur heard over the sternum with the first sound at the level of the third and fourth costal cartilages, most distinct on the fourth left costal cartilage just outside the sternum; and when patient is on the right side, a longer softer murmur is sometimes, but not constantly, heard in the same position, following the first sound. Over the parts of the left lung adjacent to the heart, the respiratory murmur is interrupted. This is most distinct above the nipple and when patient is standing; it might then be described as a soft blowing murmur, synchronous with the systole, heard only during inspiration.

In connexion with such a subject as this, one is much tempted to launch into a monograph; but I must limit myself to a discussion of some of the chief points of interest raised by this particular case.

First as to the diagnosis. With regard to the patient's first seizure this presented no difficulty. The intensely tympanitic note over a great part of the left chest, with absence of breath sounds, left no room for doubt that left pneumo-thorax was present. But why was the heart displaced backwards, and not to the right?

There were none of the extraordinary sounds to be heard which characterized the second attack, and no change of the percussion-note as one passed from the normal position of the left lung across the præcordial region; so I think there can be no doubt that when I saw him there was no air in the pericardium. The pericardium must, therefore, have been displaced backwards with the heart. Now, I find that Fagge[1] states, on Fräntzel's authority, that "when there have been previous adhesions between the pericardium and the left lung, pleurisy on the left side may cause the heart to be carried backwards away from the chest wall, so that no impulse whatever can be felt or seen." If this can happen with fluid effusion, then it should take place still more readily when air has entered the pleural cavity, and the whole weight of the heart (in the dorsal decubitus) can aid the traction exercised by the lung. There was evidence of adhesion of the pleura in various other situations in this case, which lends plausibility to the hypothesis that there may have been adhesion also to the pericardium. It is remarkable, too, that the pain first experienced by the patient was in the region of the left shoulder-blade, where there was comparatively little physical evidence of pneumo-thorax; while it quickly passed to the axillary region, where it remained almost exclusively during the subsequent progress of the case. "Pain in and about the left shoulder" is mentioned as an occasional symptom of pericarditis;[1] and it is not difficult to believe that a sudden strain on the pericardium posteriorly might produce the same symptom, and that it might pass off when the tension was relieved as the air displaced lung and pericardium backwards together. I believe, therefore, that in my patient there was adhesion between the pericardium and the left lung, and, especially in the light of subsequent events, that this was the situation in which the rupture of lung occurred which led to the pneumo-thorax. Moreover, I think the curious accompaniment to the first sound, heard sometimes while pneumothorax was present, and the slight murmurs still present in certain positions of the patient, may best be explained as due to slight constraint of the heart, produced by traction on the pleuro-pericardial adhesions.

---

[1] *Princ. and Pract. of Med.*, second edition, vol. ii. p. 168.

In the second attack the diagnosis was equally easy; all the typical signs described by writers on pneumo-pericardium were present with exquisite distinctness. The signs afforded by percussion and palpation were in themselves sufficient; a cavity containing air, occupying the precise situation of the pericardium, in which the heart changed its position freely from side to side, and from back to front, with alteration of the patient's posture, could be nothing but the pericardium itself. And when, in addition, there was the "water-wheel sound," which has generally been regarded as pathognomonic of hydropneumo-pericardium, the evidence was overwhelming.[2] The general impression conveyed by the sounds heard was that there was a splashing of fluid, but of a very small quantity: probably a teaspoonful, much less than the average amount found after death, would be sufficient to produce the effects observed. There was not the extreme loudness of the sounds described by some writers in connexion with the condition; but this, though a most striking feature when it does occur, is only occasionally present.

When we enter upon a consideration of the pathology of the case, however, things are much less clear. I think there can be no doubt that the two attacks must be closely associated with each other. I believe that in all probability a rupture of the lung into the pleural cavity occurred close to adhesions to the pericardium; and that close to the first rupture, possibly in consequence of the contraction of its cicatrix, a second rupture occurred into the pericardium itself. What the lesion which caused the first rupture may have been must be purely a matter of speculation. The explanation which most naturally suggests itself is the presence of an ulcerating phthisical cavity close to the pericardium, which ruptured first into the pleural, then into the pericardial cavity; but this does not seem to me to tally with the facts of the case. Of course, many cases of pneumo-thorax occurring in the early stage of phthisis do extremely well; but this is usually attributed to the physiological rest given to the affected lung-tissue, and to the pleura in its neighbourhood, into which infective elements are likely to escape. In pneumo-pericardium the conditions are almost the contrary; any elements which escaped into the pericardial cavity would be churned up in the fluid present by the movements of the heart, and the phthisical lung-tissue, supposing such to be present in contact with the pericardium, even if not subjected to unusual disturbance, as seems likely, would certainly not be quiescent, as in the case of pneumo-thorax. On this supposition, therefore, the absolute freedom from any symptoms of inflammation of the serous membranes, not only for some months before, but during and ever since the illness, seems to me hardly conceivable.

---

[1] Sir T. Watson, *Lectures*, fifth edition, vol. ii. p. 329.

[2] It has been shown, as I think satisfactorily, by Reynier* that the "water-wheel sound" may occur when the air and fluid occupy, not the pericardium, but the loose areolar tissue between it and the sternum; but this could hardly occur without subcutaneous emphysema as well, and in any case would not give the beautifully definite percussion signs presented by my case. This is the only condition besides hydropneumo-pericardium, so far as I can discover, which has been *actually observed* to produce the sound.

* *Arch. Gen. de Med.*, 1880, vol. i. pp. 441, 582, *sq.*

It seems probable, however, that the adhesions I believe to be present are the remains of an old insidious pleurisy, and this receives confirmation from the very remarkable description given by the patient of severe, though transient, pain in the chest some years ago. Possibly an unusual effort may have strained old adhesions at one place to the point of rupture. Whatever the lesion may have been, I think we are fully warranted in concluding that the normal structure of the serous membranes in this patient must be extremely delicate. The pericardium is generally, as we know, although not a thick, yet an extremely tough and resistent fibrous membrane. There are, however, great variations in this respect. Dr Bruce tells me he has met with a pericardium which appeared to consist of hardly more than endothelium; and if we suppose such a condition present in my patient, the difficulty of imagining the mechanism of a perforation of the membrane is greatly diminished.

In comparing my case with others on record, the most remarkable feature is the entire absence of any signs of other serious disease, or of any symptoms, except the comparatively slight ones which could be accounted for by the mechanical presence of air. The two cases which come nearest to mine in this respect are that reported by Soraner[1] from Traube's clinic, in which there was only slight fever and slight rheumatic pericarditis; and Love's[1] case, in which, however, the diagnosis seems to me by no means convincingly established, where there was also only slight fever, with slight friction in the region of the heart, possibly both pleural and pericarditic.

---

[1] "Diss. Inaug. de Hydropneumopericardio." Berlin, 1858. See Canstatt's *Jahresbericht*, 1858, 3, p. 215.

It is, of course, possible that there may have been pleurisy or pericarditis in the region where I believe the ruptures to have occurred, quite undiscoverable by physical examination. But if so, it must have remained singularly slight, and extremely localized.

A word as to prognosis. This case goes to confirm the less sombre view that has of late years been taken of pneumo-pericardium. There seems now to be no reason to regard the presence of air in the pericardium *per se* as a very alarming condition. All depends upon the route by which it has found entrance, and the other lesions with which it is associated. In traumatic cases, where there are no other injuries, a large proportion recover. When the primary disease is pericarditis, as in many of the non-traumatic cases, a certain number do well. But I have failed to find an instance of recovery when the pericardial cavity has communicated, either from injury or disease, with the œsophagus or stomach.

No *treatment* was adopted in this case except rest in bed and tonics; and there was no indication whatever for anything more.

In conclusion, I shall enumerate the most remarkable points in the history of the case, by way of summary.

1. The presence of a chronic morbid process in the chest, sufficient to lead ultimately to rupture of the pleura and pericardium, with an almost entire absence of symptoms.
2. The occurrence of pneumo-thorax in conditions of apparent health.
3. Backward displacement of the heart while pneumo-thorax was present.
4. Recovery from pneumo-thorax without any signs of inflammation or effusion.
5. The occurrence of pneumo-pericardium after an interval, also in conditions of apparent health.
6. The entire absence of irregularity of the pulse, disturbance of the circulation, or interference with the general health while air was present in the pericardium.
7. Recovery from pneumo-pericardium without any signs of inflammation or effusion, except the small, perhaps normal, amount of fluid in the pericardium indicated by the auscultatory signs.

---

[1] *Lancet*, 1888, vol. i. p. 319. It is remarkable that this is the only case of pneumo-pericardium I can discover recorded from the United Kingdom since Warburton Begbie's, in the *Edinburgh Medical Journal* for 1862.

VII.—THE AXIS-TRACTION FORCEPS: THEIR MECHANICAL PRINCIPLES, CONSTRUCTION, AND SCOPE.

By R. Milne Murray, M.A., M.B., F.R.C.P.E., F.R.S.E., Assistant Physician, Royal Maternity and Simpson Memorial Hospital; Lecturer on Midwifery and Diseases of Women, Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh, 11th February* 1891.)

(*Concluded from page* 158.)

II. The Scope of the Axis-Traction Forceps.

I desire now to draw attention to some special points regarding the scope of the axis-traction forceps in obstetric surgery.

1. We may consider the case of a *normal pelvis* where, from uterine inertia or other cause, it is necessary to apply the instrument at the brim. Our object here is not to overcome special resistance so much as to apply a force in the appropriate direction so as to effect delivery with the least amount of that force. Our object then resolves itself into seizing the head in such a way as to develop and keep up flexion, and to pull at all times in the proper axis. Now, if the principles we have discussed are sound, we accomplish the former by applying the curved blades in the proper way.

As regards the second point, we have in the simplest manner, as we have seen, a continuous indication as to how the pelvic axis varies, and as to the proper direction of traction. And here I wish to enter my protest against the teaching of Fabbri, Pinard, Parvin, etc., that the curve of the bony pelvis is not to be regarded as influencing the direction of traction between the brim and the lower part of the pelvis. These authorities claim that they have proved that the pelvis in the living subject is so modified by its soft parts that its curvature is in great measure lost. They hold that the pelvic canal is not a continuous curve, but may be regarded as a cylindrical tube whose direction is at first downwards and backwards to the level of the coccyx, and after this directly forwards almost at a right angle to the centre of the vulva.

"Obstetricians for a time held that it was represented by the curve of Carus, and then a parabolic curve was substituted, as better showing this axis; but as the investigations, first of Fabbri, afterwards of Sabatier, of Pinard, and more recently of Boissard, show the obstetric pelvis—the dynamic as distinguished from the static pelvis, the soft parts being appended to the bony pelvis, and those which make the pelvic floor, thus forming the entire pelvis—presents a cavity which is not in any respect a curved canal, but rather a cavity chiefly cylindrical, having two walls, anterior and posterior, almost vertical, and at the fundus forming a plane nearly perpendicular to these two walls. The cylinder has its fundus at the coccyx, and an opening upon the anterior wall. Now, laying aside confusing curves, pelvic inclined planes, and speculative synclitisms, the head descends to the pelvic floor in a straight line, then turns at almost a right angle to make its exit at the vulva; in other words, the axis of the birth-canal is at first a line directed backward and downward, and then a line almost perpendicular to it. Hence, until the head reaches the pelvic floor, the fundus of the pelvic cylinder, the traction with the forceps must be downward and backward, and then upward and forward."—Parvin, *Science and Art of Obstetrics*, 627.

Now to this description I entirely demur. The diameters of the head are such that it fills the canal, and if it does so it must compress the soft parts against the bony walls. The soft parts antero-posteriorly are thin, and it does not admit of doubt that the canal, while the head is there, takes its shape and curvature entirely from the curvature of the bony walls. Thus the curvature will vary with the curvature of the sacrum, and while that undoubtedly is first, in general terms, downwards and backwards, it is so to a varying extent, and long before it reaches the level of the coccyx it has begun to turn forwards. Now it is just this delicate perception of the changing direction of the axis which is the prime virtue of the axis-traction forceps, and it is this which enables us to adjust our traction with a nicety impossible by any other means. A properly constructed pair of forceps will show this curvature from the brim to the outlet, and I have demonstrated this to students over and over again.

Thus in a normal pelvis where the powers are defective the axis-traction forceps show us precisely *how* to apply the necessary *vis a fronte* by which such force is most completely economized.

2. *In Justo-minor Pelvis.*—In such a pelvis the function of the instrument is even more obvious. Here we again promote flexion, and draw the head into the brim in the most favourable attitude. And as soon as we have cleared the brim we at once appreciate the benefit of the indicating power of the instrument. A *justo-minor* pelvis has a less backward inclination of curvature than a normal one, and I am convinced that difficulty in delivering in such a case is artifically induced by forgetting this and ignoring the indication of the instrument, and applying the force *too far backward* while the head is passing through the upper third of the cavity. In a case like this the abnormal curvature is "felt" (if I may use the word) by the forceps, and its inclination unmistakably given to the operator. If this is so, the directive value of the instrument is very great, and the saving of undue force in this difficult class of cases must be of immense importance.

3. *With the Head in the Cavity.*—Assuming the head is in the cavity, but not yet on the floor of the pelvis, it is obvious that there is one portion of the canal through which the traction is downwards coincident with the vertical axis of the body, and at this point the traction may be made in the proper axis by a pair of ordinary straight or curved forceps, the axis of which lies in the

centre of the vulva. Theoretically this exists for an infinitesimally short part of the curve, practically it may be considered to do so for an appreciable distance. Now it so happens that this is probably the position of the head at which forceps is most frequently applied, and it may well be that a practitioner employing the axis-traction instrument in such a case may find it no easier to draw the head on to the perineum by it than by the ordinary forceps. Hence he naturally concludes that the former instrument has no advantages. This, as we shall see, is an unjust conclusion. But it should, at the same time, be clearly understood that for a part of the canal from about the middle of the cavity until the head rests firm on the perineum and pelvic floor, the axis-traction instrument, so far as tractive direction is concerned, has little or no advantage over the simple instrument.

But two things must be kept in view in relation to this matter:—(1.) It is not always possible to be sure without the axis-traction instrument that the head *has* reached this level (*i.e.*, the level for which traction is to be in the vertical axis). (2.) When the head has touched the floor the axis of the canal curves quickly forward, and the axis of this curvature can only be determined by the axis-traction instrument. Hence for a head in the cavity the axis-traction forceps are again the more efficient and the safer instrument.

4. *With the Head at the Outlet.*—I am not likely to be challenged when I say that probably the commonest accident with the ordinary forceps in the hands of practitioners, is the rupture of the perineum as the head is clearing the outlet. I presume that with the ordinary forceps this has happened in the hands of every one with any experience. Now it seems to me that this is due to two causes:—

(1.) The mechanism of delivery at the outlet, known as *Extension*, is very imperfectly understood, or I should say is misunderstood by most accoucheurs. It is in most books most erroneously described, and by many teachers improperly taught.

This movement is sometimes represented as being a movement round the occiput as a pivot resting on the pubic arch, while the forehead, face, and chin successively glide over the perineum. But this pivotting movement is only a part of the process, for as soon as the sub-occipito-bregmatic diameter is clear, a gliding movement of the whole head forward begins, so that the occiput and upper part of the face are born at the same moment, and the largest diameter which stretches the perineum is the first which escapes, viz., sub-occipito-bregmatic. On the other hand, were the occiput to remain on the pubis all through, and the delivery to be completed by the pivotting movement only, it is plain that the occipito-mental diameter (the largest in the head) would have to stretch the outlet, which in a rigid or primiparous perineum would inevitably be accompanied by laceration. This, then, it seems to me is the primary cause of the frequency of perineal laceration. The forceps are applied, the occiput is fixed on the arch, and the head is "levered out" round the occiput as a pivot—the sliding movement being totally ignored.

(2.) But even in any case where the mechanism is understood the difficulty of delivery is not removed. In the effort to hold the forceps in the way they must be held in the position of the patient, the blades are apt to slip or rotate on the head, and the points will thus project; and where this is avoided the difficulty of applying the traction in the line of least resistance is complicated further by the effort to combine both the gliding and the pivotting movements.

Now with the axis-traction forceps all difficulty and practically all danger at the outlet disappear. But for this end they must be used still rigorously as axis-traction instruments, and I am convinced that Tarnier and his pupils are to blame for totally misrepresenting the value and use of his instrument at this part of the canal.

A moment's consideration of the nature of the curve at the lower end of the canal will show us that the change of direction is more sudden and more pronounced than anywhere else. Accordingly, it is surely here, if anywhere, that, if there is anything at all in the axis-traction principle, we shall find its most obvious and valuable application. An error of direction in the upper part of the canal is undoubtedly objectionable and to be avoided by all means, but there the tissues are supported by the bony canal, and withstand a great amount of pressure without any apparent serious inconvenience.

But at the outlet the case is very different. The posterior boundary of the outlet consists of soft parts entirely, and the danger they are liable to is shown in the frequency with which they are damaged by ordinary forceps in delivery; and, as I have said, it is here if anywhere that the delicate perception of the line of least resistance which the axis-traction instrument gives is of value. By its means the mechanism of "extension" as it occurs in a normal labour can be reproduced to an absolute nicety, and thereby 9 out of 10 cases of ruptured perineum avoided.

Yet in the face of this fact Tarnier at this point in the operation, the most difficult and the most delicate, the point in which the virtue of the instrument is obvious to anyone who uses it aright, throws aside the axis-traction principle entirely, and as soon as the head begins to extend, grasps the rods and handles together in one hand and delivers as if with the Levret instrument (Fig. 15).

I would very strongly maintain that the safe delivery of the head over the perinæum can be effected by the axis-traction forceps in a way which is impossible by any other means. This efficiency is due to the accuracy with which the ever varying line of traction is indicated by the index of the instrument. If this is scrupulously followed, the complex movement of extension is effected with perfect exactitude; the blade of the forceps can never project beyond the contour of the head, and, as often happens, deal disaster to the perinæum and rectum, and by no possibility can the occipito-mental be dragged through the antero-posterior diameter of the outlet. This demands, I need hardly say, great care and keenness of attention; the movements of the handle must be watched and carefully followed; traction should be carefully graduated, intermittent, with considerable interval between each effort. Besides this, however, it requires a properly constructed instrument, sensitive and light. The very weight of the Tarnier model interferes with its proper use at the perinæum, because the effect produced by the mass of such an instrument is no doubt often greater than the traction required to effect delivery. And this may be one reason why its use at the perinæum may be so little appreciated in the home of its birth.

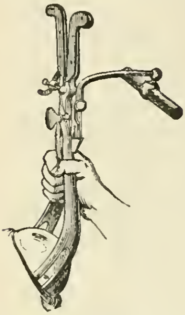


FIG. 15.—Misuse of Axis-traction Forceps at perinæum (after Poullet, etc.) Complete delivery of head should be effected by means of the traction handle only.

In 1884 Dr Halliday Croom drew attention to its value at the outlet in cases of occipito-posterior, and stated that he had found in these instruments a means of saving the perinæum, which was very notable. I have no doubt his subsequent experience has borne this out, in these the most troublesome of all cases at the outlet, and the result is intelligible on the same principle as applies to anterior cases,—namely, the certainty with which the tractive force can be applied in the most effective direction, the traction being directed only to the advancing of the head, not to the stretching of the walls.

I would urge, then, very strenuously the use of these instruments at the outlet. Properly applied and properly used they will give an admirable account of themselves. I should say that the forceps are applied at the outlet twenty times for once they are used at the brim, and it is a most unfortunate thing that any one should, by misunderstanding their value, get only one-twentieth of the good of them.

I may say, as regards my own experience, that for the ten years I have used these instruments, in cases of all sorts, occipito-posterior, face cases, rigid perinæum, flat pelvis, etc., I have never yet injured the perinæum on any occasion, beyond the slight split in the margin of the mucous membrane, which is inevitable in all first labours, and consequently during that time I have never put a stitch in a perinæum. This result demands patience and care, and an intelligent use of the instrument.

5. *The Axis-traction Forceps in Flat Pelves.*—In June 1888 I read before the Society a paper dealing with the use of the axis-traction forceps at the brim in rickety pelvis. I mentioned a case in which, with typical rickety mechanism, delivery by the axis-

traction forceps was accomplished without difficulty. In the autumn of last year, while in charge of the out-practice of the Maternity Hospital, I saw another case of still greater interest, and equally successful. I was sent for by the Residents to see a patient in her third labour, whom they had failed to deliver. We could get an imperfect account of the previous labours, but one of the children seems to have been born dead with forceps, and the other by embryulcia. When I arrived the woman had been in labour for more than 12 hours. The waters had long escaped, and on examination I found the head in the brim, but not engaged so firmly as to prevent its being pushed up. Both fontanelles could be readily felt. The Residents had attempted to apply forceps, but had failed to get them to lock.

I applied the instruments shown, which had just been finished, taking care to fit the blades over the sinciput and occiput with accuracy. The handles were naturally more apart than usual, but the rods came together and the locking was not difficult. When traction was made, the handles came back to the perinæum, and this, of course, indicated great backward inclination, as one would expect in a rickety pelvis. Traction was continued *with only one hand on the traction-bar*, and after a little I found the head was coming through the brim. As it did so the handles went a little further back, so as to press on the perinæum somewhat, and then the head slipped into the cavity. Very slight traction brought it to the outlet, the passages being dilated and roomy, and without any trouble whatever *the head came readily out in the transverse at the outlet*, no rotation having occurred in the cavity at all. When the head was examined it presented a typical example of rickety moulding, and showed the flattening and shear in a most characteristic fashion. Unfortunately, owing to a mistake, the measurements were not made at the time. On examining the pelvis post-partum, I found the diagonal conjugate to be only 3·25 inches. Taking ½ an inch off this gives a true conjugate of 2·75 inches. The measurement was done with care, and I have no doubt of its accuracy.

Barnes gives 3 inches as the limit at which turning is practicable; others, however, hold 2·75 will permit a living child to pass by turning. But I am not aware that any one has suggested that the forceps could compete with turning down to these limits. Yet a careful consideration of the whole subject, taking into account the theoretical principle involved and my own experience, leads me to believe that a properly constructed pair of axis-traction forceps will deliver a child in a flat pelvis down to the limits which can be dealt with by turning, and with a much greater chance of delivering it alive.

The objections to the use of forceps in flat pelves have been mainly two. The one based on a fallacy, the other sound enough.

The *first*, emphasised by Schroeder, may be stated as follows:—Owing to the configuration of the flat pelvis the blades can only be applied in a transverse or oblique diameter. This, by compressing the skull antero-posteriorly, was supposed to cause bulging in the transverse diameter, and so force the parietal bones more firmly than ever on to the promontory and pubis.

That this is a fallacy the experiments recorded in the paper referred to proved, for I there showed that a fœtal head can be compressed to the extent of 1½ inch without making the slightest increase in the bi-parietal diameter. This I pointed out was explained by the fact that the head "telescoped," the frontal and occipital slipping under the parietals, and accommodation for the contents being found in the vertical elongation of the head. Thus it is plain that the application of the forceps to the extremities of the antero-posterior diameter, while easy in a flat pelvis, is in no way objectionable. Further, it should be borne in mind that any attempt to grip the head obliquely, as has been recommended, is objectionable, because it is obvious that this telescoping action cannot be so perfect under oblique pressure.

But the *second* objection to the use of forceps in flat pelves refers to the defect in the line of traction, which, with ordinary forceps, is even more pronounced in flat than in normal pelves.

It is obvious, if we consider the inclination of the axis of the brim in a flat pelvis, that the line of traction with ordinary forceps is even further in front of that axis than in the case of a normal pelvis. The angle at X^1 (Fig. 16) is greater than the angle at X, hence sine X^1, representing the ineffective force (that spent on the pubis) will bear a greater proportion to cos. X^1 than sine X does to cos. X.

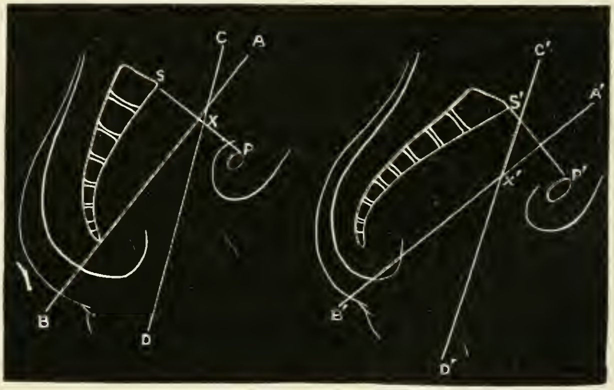
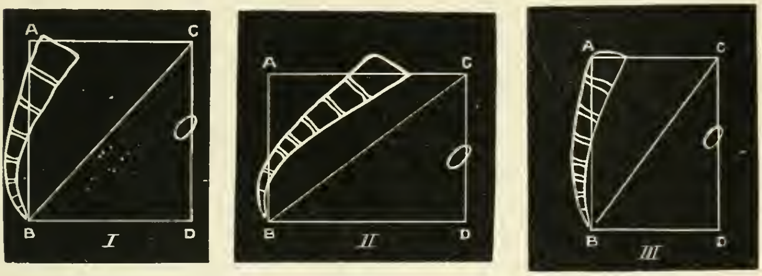


Fig. 16.—Comparison of Axes of Normal and Rickety Pelves.

This fact can be graphically represented by the following device:—Let I., II., III. (Fig. 17), be respectively vertical mesial sections of normal, rickety, and justo-minor pelves. Draw the perpendiculars A B through the tip of the coccyx, and the perpendiculars C D through the crest of the pubis. Complete the parallelogram by the horizontal lines A C and B D, the former passing through the promontory and the latter through the tip of the coccyx. The parallelograms so constructed give a graphic representation of the cavities of these pelves. They express the proportion between the vertical and horizontal elements. Thus it will be seen that in I. the parallelogram is nearly a square—that is to say, its vertical and horizontal elements are nearly equal. In II. the horizontal element is obviously greater than the vertical, while in III. the vertical preponderates. Now draw the diagonals C B. The angles B C D will measure the *relative* inclination of the axis of the brim in the three forms of pelves, and consequently indicate the special modification necessary for forceps traction in each case. Accordingly, it will be seen that in II. (the rickety pelvis) this inclination backward is greater than I., while in III. (justo-minor) this inclination is less than I.

Fig. 17.—Comparison of Inclination of Axes in



I. Normal. II. Flat. III. Justo-minor pelves.

A B, verticals through coccyx; C D, verticals through symphysis pubes; the diagonals C B, indicate the *relative* inclination of line of traction.

Now, for a normal pelvis Tarnier estimates that every 30 lbs. of force which tends to depress the head in the proper axis is accompanied by 26 lbs. of force expended on the pubis where traction is made with the ordinary forceps. Accordingly, if we take this estimate as approximately correct, it is obvious that the amount of ineffective as compared with effective force will be greatly increased where we deal with a flat pelvis. In other words, where we attempt to deliver a normal head through a flat pelvis with the ordinary forceps, more of the force applied will be spent in crushing the head on to the pubis than in pulling it along the canal.

With the axis-traction instrument the case is totally different. Practically the whole force is expended as efficient force tending to cause the descent of the head. Then taking the average biparietal as 3½ to 4 inches, there could be little difficulty in dragging it through a 3½ brim—in fact such a head would show little moulding, if any at all. Let us suppose the conjugate is contracted to 3 inches, then even this only assumes an overriding of the parietals to ½ inch, an amount of accommodation which can readily be obtained by compression of the newly born fœtal head without apparent inconvenience. If my assumptions are correct, then it is not difficult to see that a 3-inch conjugate may readily permit the passage of a fœtal head.

But I have as yet assumed that the head is entering with its *bi-parietal plane parallel with the plane* of the brim. Now we know that Naegele's obliquity is of the highest importance in normal rickety mechanism, *i.e.*, the posterior boss is held back by the promontory, while the anterior moulds itself round the symphysis pubis. The manner in which this aids the passage of the head through the brim is obvious, and requires no further discussion here. It would be, however, of very great interest if we could show that this mechanism is in any way favoured by the axis-traction forceps. I have already shown that the special advantage of the curved forceps in occipito-anterior cases is that it does not cause any interference with the relative position of the occiput and sinciput—does not, indeed, interfere with the normal mechanism. This is undoubtedly so when the head is oblique or antero-posterior. But when the head is transverse the case is different.

When the blades of a curved pair of forceps are applied to the sinciput and occiput of a fœtal head lying in the transverse at the brim they will tend to grasp the head somewhat nearer the pubic than the sacral side of the head. When traction is made there will be a greater tendency for the pubic parietal bone to descend, the sacral or posterior boss being held back by the sacrum, round the promontory of which it pivots. In this way Naegele's obliquity will be developed in the process of extraction, and the normal mechanism of such a case copied. That this is so the case recorded seems to prove, for as the head cleared the brim there could be no doubt that the handles curved backwards while traction was being made—a movement which would indicate a certain amount of rotation round the promontory. Such a movement as this will obviously facilitate the escape of the head, and probably diminish the available diameter by another ¼ or ½ inch.

Contrast with the claims here made for the forceps the advantages offered by turning. The special claim made on behalf of turning in flat pelves is that we bring down a diameter—the bi-temporal—which is probably one inch shorter than the bi-parietal. It must, however, be kept in mind that a flat pelvis is seldom so roomy at any one side as to allow of the sliding of the occiput so far from the middle line as to permit the bi-temporal to lie in the conjugate. Probably in most cases we get the head in a position midway between, giving us a diameter of say 2¾ or 3 inches. And as I have pointed out, this is practically obtained by easy moulding under the action of forceps.

But, further, having got the body down and the head thus engaged, we have these difficulties to bear in mind:—1. We can no more exercise traction in the proper axis by the body of the child than we can by the straight forceps, hence much of the force is spent on the pubis. 2. This force is transmitted by the neck of the child, a matter of grave risk to the fœtus. 3. Every moment of delay increases the peril of the fœtus by compression on the cord. 4. The application of supra-pubic pressure (Schatz' method) tends to cause bulging of the bi-parietal diameter, and demands an amount of force out of all proportion to that required by the forceps.

Against this now place the claims of the forceps. 1. Seizure of the head in such a way as to favour Naegele's obliquity. 2. Traction of the head in the proper axis, so that all force applied is effective. 3. A diminution of the diameter by moulding probably equal to the difference between the bi-parietal and available bi-temporal. 4. Safety of child during operation. 5. Avoidance of all intra-uterine manipulation. On these grounds I am inclined to believe that in the management of flat pelves we have in the axis-traction forceps a substitute for turning—a safer and more efficient means of interference.

From the foregoing study of the mechanical principles involved in the axis-traction forceps it is obvious that their efficiency depends largely on the accuracy with which these principles are followed in their construction. The somewhat complex nature of their construction renders it very easy for errors in their details to arise even in the hands of careful makers. This is especially likely to occur where the instruments are turned out in large quantities. While the practised eye can readily detect any essential error in their construction, this is more difficult in the case of those less familiar with the details, and a serious error in the curvature of the rods may readily be overlooked. On this account it is well that a ready means for testing the accuracy of the construction of any instrument should be available. The following method is sufficiently simple, and will enable anyone before using an instrument to assure himself of its proper construction:—

A piece of paper about 18 inches square should be firmly stretched on a drawing board or other smooth surface. A pencil line should be drawn down the centre of the paper. Place the left blade of the forceps on the middle of the paper so that the shank coincides with the line already drawn, the hollow side of the blade being upwards. Trace an outline of the blade on the paper, holding the pencil perfectly vertical in doing so. Mark the point at which the shank joins the curve of the blade; call this point P. Mark the centre of the tip of the blade; call this point Q. Join P Q by a straight line. This will form the chord of the arc which forms the middle of the curve of the blade. Bisect P Q by a line at right angles to it E F. Describe a circle G Q V P H whose centre lies on E F and whose circumference touches Q V P. The arc Q V P lies in the middle of the blade. Now draw a tangent A B to the circle Q V P at the point V. This will be parallel to the chord Q P. Now lay the blade on the paper in its original position, taking care that the points P and Q correspond precisely with their position on the forceps. If the traction-rods are properly constructed the *stud will lie on the line A B when the rod lies close to the shank.*

It will be found that the circle G Q V P H has a radius of about 7 inches; but as it is difficult to obtain forgings which are always identical, this radius may vary somewhat. This variation does not materially affect the efficiency of the instrument provided it is kept within reasonable limits, and the construction given will enable anyone to determine the proper curvature of the rods for any instrument, whatever the curvature of the blades may be.

The Plate at the end of this paper will show accurately how this projection is made.

LITERATURE.

TARNIER.—*Description de deux nouveaux Forceps.* Paris, 1887.

TARNIER.—"Perfectionnement dans la construction et dans l'application du Forceps," *Trans. Internat. Med. Congress.* London, 1881. Vol. iv., p. 239.

In these papers M. Tarnier gives an account of the principles of his invention, and a general account of the construction of the new forceps; but without any explicit detail which would insure the proper proportions of the instrument being secured. The instrument described in the first paper had peculiarities of blades and handles which were abandoned later on, and the instrument described in the second paper approaches closely as to curvature to the model of the ordinary Levret instrument.

SIMPSON, A. R.—"On Axis-traction Forceps," *Trans. Edin. Obstet. Society,* 1879–80, p. 219, and *Edin. Med. Journal,* Sept. and Oct. 1880.

SIMPSON, A. R.—"Again on Axis-traction Forceps," *Trans. Edin. Obstet. Society,* 1882–83, p. 143.

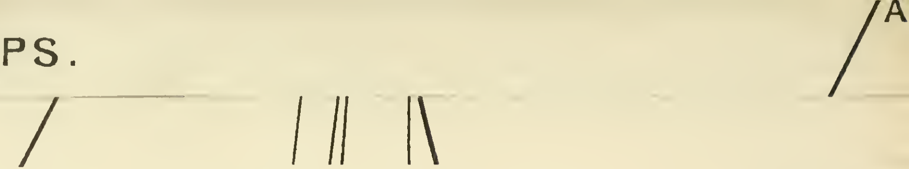
These papers are devoted to an exposition of the axis-traction principles and a description of Prof. Simpson's special adaptation of Tarnier's invention to the J. Y. Simpson instrument, which is modified in various ways.

HERMANN.—*Ueber eine neue Geburtsgange zur Extraction des im Beckeneingange stehenden Kindskopfes mit Abbildungen von Th. Hermann,* 1884.

FOULIS.—"On Axis-traction Forceps," *Trans. Edin. Obstet. Society,* 1886–87, p. 189.

Under the class of instruments described by these authors

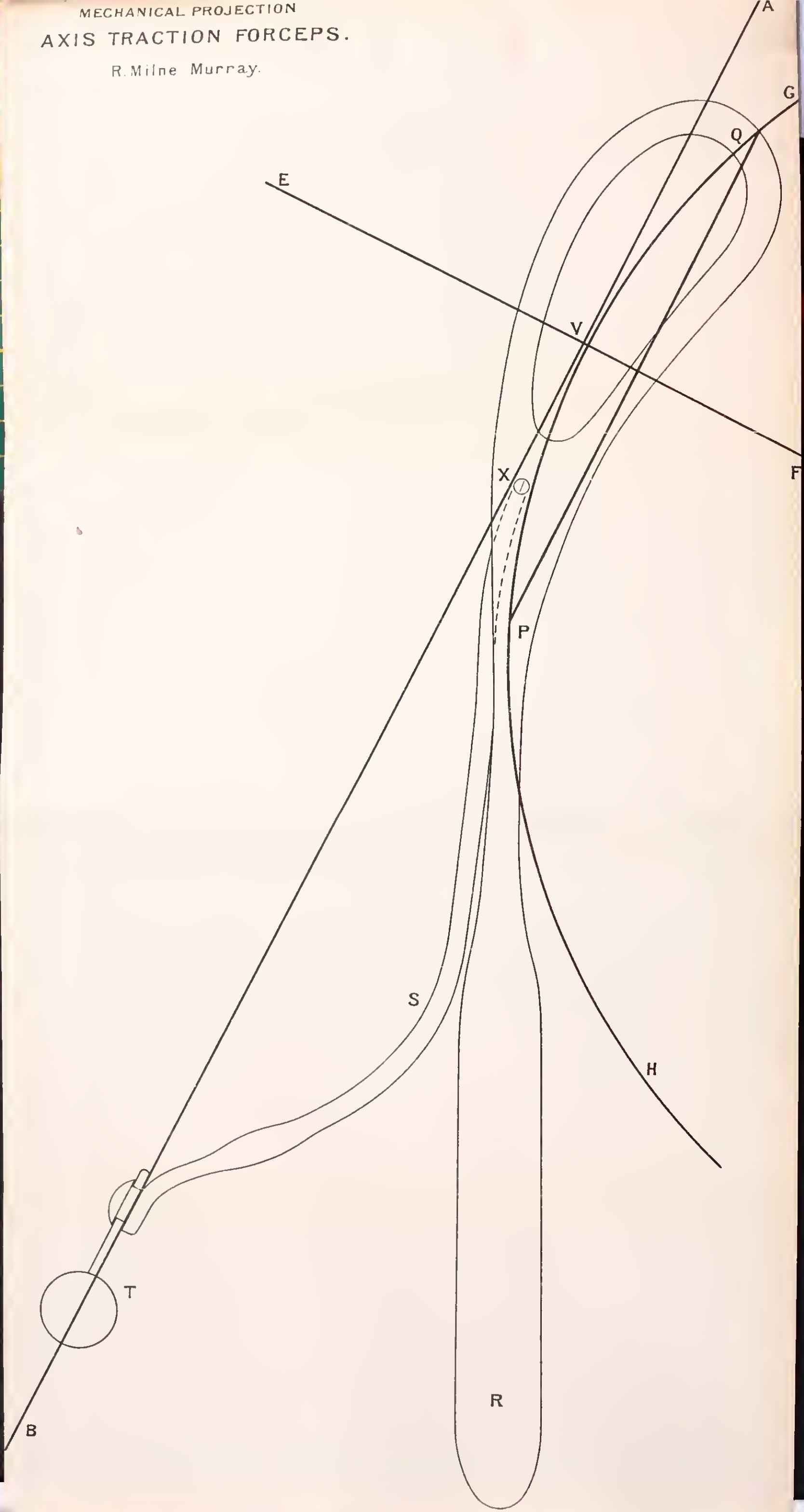
AXIS TRACTION FORCEPS.



MECHANICAL PROJECTION

AXIS TRACTION FORCEPS.

R. Milne Murray.



J T Murray, Edinʳ

come all instruments in which an additional handle for traction is attached, and in which both hands are used for traction,—the one grasping the application handles, the other the traction handle. For example, the device recommended by some of fixing a blunt hook or a towel in the lock and using this as a tractor along with the handles, is of this class. None of these instruments has any relation to Tarnier's principle, and these are in no sense "axis-traction." They are essentially dangerous instruments in that they give greater power of traction in a faulty direction.

HUBERT.—"Note sur l'équilibre du forceps et du levier," *Mémoires de l'Académie Royale de Belgique*, 1860.

Hubert's instrument is the original of all those with a rigid traction bar, or what amounts to the same thing, with a "perineal curve," such as Aveling's, Reid's, Morales', etc. Their advantages and limitations are discussed in the text.

CROOM, J. HALLIDAY.—"On the advantage of the Axis-traction Forceps in Low Operation," *Brit. Med. Journal*, 1884, vol. ii., p. 1237.

The author discusses the advantage of the instrument in—

1. Occipito-posterior cases in which anterior rotation occurs.
2. Occipito-posterior persistent cases.
3. Saving the perineum.

MURRAY, R. MILNE.—"On the Effects of Compression of the Fœtal Skull, with special reference to Delivery in minor degrees of Flat Pelvis," *Trans. Edin. Obstet. Society*, 1887–88, p. 207.

This paper contains an account of some experiments on the fœtal skull, showing the influence of antero-posterior compression in altering the other diameters, and discusses the delivery of flat pelvis by the axis-traction forceps.

POULLET.—*Des Diverses Espèces de forceps.* Paris, 1883.

This vol. (228 pages) gives an account of the various forms of forceps from those of Chamberlen onwards. It gives also a list of all papers on Tarnier's forceps up to 1883. Since then the literature is of minor interest.

VIII.—THE MEDICAL PROFESSION IN THE UNITED STATES.

BEING THE SUBSTANCE OF THE PRESIDENTIAL ADDRESS DELIVERED TO THE CARLISLE MEDICAL SOCIETY AT THE OPENING MEETING OF SESSION 1890-91.

By NORMAN WALKER, M.D. Ed.

(*Concluded from page* 142.)

HAVING given you, then, a brief description of the schools I have visited, I will, as shortly as possible, sum up the result of my observations. Firstly, then, it seems to me that the schools of America are not established on the best basis. Over and over again I came across medical schools and universities established either to the glory of some departed millionaire or on account of some private spite. This leads to splits among the Faculty, and the consequent weakening of the schools. In Baltimore, for instance, a town about the size of Edinburgh, there are four bodies, each with the power of granting degrees. The illustration that I have given you of S—— is only an example of what may occur at any day in any part of the States. The control of many of the schools is vested in irresponsible bodies, for I cannot consider that a collection of dissatisfied medical men who found a rival school to that of their opponents is a satisfactory governing body. Then the hospitals are not in any way connected with most of the schools. The professor may happen to be physician or surgeon to a hospital, but it is quite as likely that he is not. In many cases the State, City, or County Hospital is the only one available for clinical instruction, and it may be situated miles from the medical school. One professor attached to such a hospital told me that the Board had to sanction everything once a week. If any medicine ran out during the week and a patient needed it, he had either to supply it from his own pocket or the patient had to go without it. This is not, of course, a universal, but by no means a solitary case. The buildings in which teaching is carried on are, as a rule, too small. Instead of each subject having a department to itself, two or three lecture theatres have to serve for all, and the students may spend several hours on end in the same room listening to different lectures. The theatres, however, are very superior to ours in their seating, almost all being fitted with lift-up chair seats with a writing board fastened to one arm. One is thus enabled to sit, write, and listen much more comfortably than on our old-fashioned benches. It would be impossible, even if desirable, to institute a direct comparison between the teaching of Edinburgh, where most of us were educated, and the States. The card or "roster" of the Pennsylvania University shows how differently the classes are arranged from ours.

When I left home I was inclined to agree with Mr Cathcart, that possibly didactic lectures were rather overdone in this country, but after my experience in America I should advise extreme caution before allowing Mr Cathcart to introduce the very smallest portion of the thin edge of his wedge. The Americans largely agree with Mr Cathcart. They endeavour to make all their lectures practical, and many of them succeed so thoroughly that only the reading men among the students can possibly follow them intelligently, on account of a junior student's natural ignorance of the terms used. The American teachers are practitioners first and professors afterwards; and every subject, from anatomy to micro-organisms, is illustrated by reference to "cases I have seen." No subject is kept to itself. I am here speaking generally. A lecturer on Pathology will branch off to a clinical picture of a case of pneumonia, while a lecturer on Anatomy will discuss the treatment of Pott's disease. Many of the lectures are illustrated by cases brought into the theatre, where, of course, they can be seen only by those near. I never heard in any of the schools the classic description of a typical case of any disease, with its etiology, pathology, symptoms, diagnosis, and treatment, thoroughly discussed. The fact is, that the want of a thorough grounding in Anatomy, Physiology, Pathology, and Therapeutics makes it impossible for a lecturer on Medicine to deal so freely with his subject as he can when he can presume on his students' knowledge of the subject, and can go straight on without explaining the normal structure and functions of the affected organ with which he is dealing. The students' days, as you note in that card, are simply filled to overflowing with lectures delivered on odd days, not even the most important subjects being allotted more than three days a week. Each class is attended by at least the students of two years. The first and second years' men attend one lot, second and third another, and to some lectures the whole school turns up. This can only be waste of time to many of the men, for what can a first year student gain from lectures on Clinical Medicine or Midwifery? The number of practical lectures is enormous. When you consider that the course only lasts three years, and that in this are included courses on the nervous system, ophthalmology, otology, laryngology, diseases of the urinary organs, diseases of the chest, and may be one or two other special subjects, it is plain that the time must come off the more elementary subjects, which are the only true foundation of a good education. We think we do well to turn out a fair general practitioner in four, now five years. The American schools endeavour to give a man the chance of turning a specialist in three.

One great fault in the American schools is the fact that almost all the positions are honorary. Now, while this is no great deterrent to men who hold the clinical chairs—for to them these chairs are well worth the time they give to them—it has the very worst possible effect on the purely scientific subjects. The chairs of Anatomy, Physiology, and Therapeutics are, in the Western schools, always held by young men, who hold them simply as steps to the clinical chairs, and, to put it plainly, as advertisements. If the students pay fees they are grossly inadequate, and go to a university fund, and not into the pocket of the man who does the work. One professor of Anatomy told me that the only remuneration he got was his profit on the sale of "parts." They are all engaged in practice, and therefore have no time to devote to the practical instruction of their students. Very many schools have no class of Practical Histology, and a man may actually take his degree without ever having looked through a microscope. (*Fact.*) All this tends exactly in the direction which one would expect. The clinical lectures are almost invariably excellent, always practical, and always very full of suggestions for treatment. The scientific ones are just exactly the reverse. They are almost always badly put together, and are palpably a melange of one or two text-books. There can be no improvement in this matter until it is realized that the labourer is worthy of his hire, and the students pay sufficient fees to enable a man to devote his whole time to the duties of his chair. I have not mentioned Pathology. In the majority of schools it is never taught practically, and many graduates appear never to have seen a section of a tissue.

In all my remarks I do not mean in any way to disparage the American teachers or practitioners. The professors in the older schools are all awake to the deficiencies of their system; but, in my humble opinion, they do not go about things in the right way to cure them. Instead of grappling with this hydra-like abuse, and saying, " We will be no party to this system, but will teach our students thoroughly from the bottom upwards," they pander to it, endeavour to think that the monster might be worse after all, prefer to bear the ills they have, and say, " Since the course is only three years (at most), we must teach those men as much practical work as possible, so that we may turn them out as familiar with every disease as is practicable in that time."

A French-Canadian remarked to me that he preferred American text-books to English ones, as they were so full on the subject of treatment. This is perfectly true, and the reason thereof seems to me to tell entirely in favour of our British readers. An English physician, writing on any subject, knows that if he describes clearly the symptoms, diagnosis, and pathology, all the rest he need do is to indicate the line of treatment, for he can assume that his reader's knowledge of Practical Physiology and Therapeutics will enable him to carry out any indicated plan.

I am not one of those who think the subject of treatment unimportant; but, on the other hand, neither do I believe much in specifics; and, given a diagnosis, a physician should know the physiological effect he wishes to produce, and what drugs will produce it.

An American writes from another point of view. His readers are not so well grounded in Anatomy, Physiology, and Therapeutics, and consequently he is bound to be more profuse on the subject of treatment. As an illustration of this I may recall Dr Marion Sims' own account of his commencement in practice, and how, when he had a case of infantile diarrhœa, he took down his book, and selecting the first prescription advised, prescribed that. As it failed, he tried the last, then the middle one, and all without success. On the death of the child Dr Sims described how he removed his door plate, threw it down a well in his garden, and went back to New York for two more years of study.

In concluding my remarks on the teaching in the States, I can truly say that the professor of the established schools is fully equal to the professor of ours. He has not the early opportunities which our men have; he has no opportunity of obtaining as an extramural lecturer a good training for a chair. His hospital service is broken with three months off and three on, so that his clinical teaching has no continuity; but in spite of all this there are many American professors who would be equally prominent in our country. The vast majority of the Western schools are simply a scandal and a disgrace to civilisation, and the contempt in which they are justly held in this country—a contempt which too often includes all American schools—is only equalled by the contempt in which they are held by the educated Americans themselves.

The faults, however, are almost entirely in the system, and only to a minor degree in some of the men, and the reforms are so intimately mixed up with politics that they can only be hoped for—some day.

I have no time—even had I your permission—to go into and explain political matters, but it is evident that little can be expected from Federal legislation, each State being so very jealous of its own rights.

Students.

The student of the States is a good deal different from our student. The course everywhere is nominally three years, but many schools have a clause accepting a year's private study with a practitioner as one of those years. Of course, I need hardly say that such a certificate of study is very easily procured, so that the course can be, and often is, completed in two years.

There is in most schools no entrance examination, and that fact is often very apparent in looking round the benches. Owing to the shortness of the course and the American characteristic of trying many trades, a man may take up and try his luck at Medicine; if he does not get on he has only spent two years—he can give it up and go back to his drug store, or to sugar broking, or to political life. This, to me, greatly accounts for the enormous number of medical men in the States, where the proportion to population is far greater than with us. The students on an average are at least five years older than our students. The smooth-faced boy whose face is so familiar in our class rooms is a *rara avis* in the schools there, and, generally speaking, this tends to better order than is found in our classes. The social position—I again speak of the class as a whole—is much inferior to that of our students. This was marked everywhere. Only in the Harvard School, which is known as the "swell" school, was the gentlemanly appearance of the students in any way comparable with that of our Edinburgh students. In their favour I have to say that I think they work harder than do our students—in fact they work too hard. One man whom

I met, a young graduate of English birth, who was compelled by stress of fortune to get through with his course in two years or not at all, told me, and I had no reason to doubt him, that during the whole of that time he worked an average of sixteen hours a day. He certainly had a knowledge of his profession which was wonderful considering the short time he had studied, but he looked wretchedly ill and worn out, and told me that the proportion of the hard working students who succumb to typhoid, diphtheria, and other weakening diseases, within two years of graduation was very large. This possibly short course is truly, if you will excuse the trite saying, the curse of American education. I don't speak of the impossibility of getting up a subject so vast in such a short time. I believe that there are every year in Edinburgh—I speak of it because most familiar to me and to the majority of the members of this Society—scores of men who could get up the work and pass creditably the examinations as they at present stand in two years did the laws of the land and the regulations of the Council allow such a thing to be done. But I ask you, and I ask you confident what your answer will be, Will such a man have the same thorough, intimate knowledge of his profession which will be found in scores more who after studying for four or five years pass an examination possibly not so brilliant and successful as the men with whom I have compared them? It is education and not examination which is the business of a university or a medical school, and its main duty is not to provide lectures on scores of subjects with which a man may stuff himself with a superficial knowledge of all the specialties under the sun—not simply to provide these lectures and hold an examination—but it is to teach not only the class but the individual student, to teach him thoroughly, to teach him practically, to see that he understands what he is being taught as he goes on, and to feel that it can say, "We know that we have taught you thoroughly, we know that you understand what we have taught, and we know that we are giving to the world no specialist, but a high average practitioner, and one in whom we have laid a thorough foundation and groundwork on which he can build to the full height of his ability."

The practitioner in America is a good deal different to the British general practitioner. In America a very large amount of a man's work is done in what he calls his office. In some cases this is simply another name for a consulting-room; but in most cases the name means what it says, for this consulting-room is located in a couple of rooms in a business block in the centre of the city. The ordinary man has three periods at this office daily, say, 9–11, 2–4, 7·30–9, and this is indicated either on his door-plate or in glass letters on the window. Between these hours he visits the patients he has to see, in his buggy, which he hitches on to a post while he is in the houses, for very few men drive with a groom. The fees are so much larger than ours that most men pay what we would think a very small number of visits. One man, who told me he was making about £1000 a year, had an average of four visits a day. Respectable medical men rarely see any one at their offices for less than two dollars, often three, four, and five, while visits run about the same figure. Confinements run, as a rule, twenty-five dollars. The men who take ten-dollar ones are regarded very much as the men who do 12s. 6d. midwifery in this country.

The readiness to face any operation is a characteristic of the American practitioner. Almost any general practitioner will attempt operations which on this side always fall to the specialists. Urethrotomy and perineoraphy are done by every one; the former is sometimes done in the office, the patient going home afterwards. Although dispensing medicines in our sense is almost unknown, almost every physician keeps a stock of "triturates" on his table, and with their assistance treats quite a number of cases. As a rule, each man keeps to one chemist, who supplies him with prescription forms, on which are printed his name and consulting hours, etc., to my mind a very useful plan. Of course, the immense number of proprietary preparations tends to the continuance of this "one chemist" system. If a man has a fancy for any preparation, he can instruct his druggist to keep it in stock.

The relations between the members of the profession are, I think, on the whole better than on this side. Of course there are outsiders. There must be everywhere; but the office system leads to such ready changing of doctors that etiquette on that matter is chiefly conspicuous by its absence, and consequently there can be no breach of it, and no one has any ground for taking offence.

It is generally agreed, by unbiassed and unprejudiced observers, that American practitioners are wonderfully good practical men. In conversation one is struck by their sharpness and originality, and also occasionally by their astonishing ignorance of what are to us the tritest of ideas and facts. The average American physician is a well-educated empiric. He may not be thoroughly acquainted with the pathological anatomy of disease, but he is brimful of the various remedies for it. He may not know the pathology, he may not know the exact action of the drug, but he can diagnose, he knows the treatment to use, and, to use a slang expression, he generally "gets there." He would probably thoroughly satisfy those gentlemen who put so much faith in the unqualified assistants; he would set fractures, know measles when he saw it, and treat all ordinary diseases; but it is the obscure and complicated disease, where the diagnosis lies between three or four different things, and needs thorough and careful study, that gives the real test, and demonstrates whether or not a man has on him the real Hall mark of a thorough grounding.

The United States are the home of quackery. Homœopathy is amazingly strong. I know that there are no homœopaths here; but I may owe some one an apology for putting homœopathy in this prominent position. I believe there are conscientious homœopaths, in the same way as I believe there are conscientious people who believe in the eternal damnation of unbaptized infants. I do not agree with them, but I would leave them alone.

In the States, however, homœopathy is used almost exclusively as an advertisement. Sharp as the American undoubtedly is, there is no one who takes more quickly to a fad than he does, and the fact that a doctor is a homœopath is to many people an extra reason for employing him. He is looked on by the regulars as a quack, therefore he probably knows more than they do, seems to be the line of argument. The homœopath in the States, in ninety-nine cases out of a hundred, practises general medicine under the mask of homœopathy. You will hear with amazement that in Chicago the homœopaths almost equal the regular practitioners; the man with the largest practice there is a homœopathic surgeon! I endeavoured to obtain an explanation of this singular term, but failed to get an intelligent interpretation anywhere. The regular profession have in their code of ethics a rule advising against consultation with them; but the whole thing is done away by an enormously elastic saving clause at the end of the rule, which says, "except where humanity demands, etc." Homœopathy is in most places a perfect gold mine. If any one can make up his mind to abandon the etiquette of the profession, and wishes solely to make money, especially if he be a surgeon, he cannot do better than go to the States, call himself a homœopath, and his success is assured.

The next variety is the eclectic, who professes to have an open mind, and to practise both homœopathy and allopathy as he sees necessary. He does not seem to have so much success as the homœopath.

Then comes the Christian scientist, who is our faith-healer, and believes solely in the efficacy of prayer. The law, however, is pretty severe on this class, and they have only a moderate amount of success. Then there is the Indian doctor, the Chinese doctor, and varieties of the more utter quacks. The laws of the profession vary much in the different States, and this is the mountain which stands in the way of complete reform. The Republican party is very jealous of any interference with State rights, and many reformers told me that all their hope was in public opinion, as it was most unlikely that the Federal Government would ever interfere. All the States have a Board of Health, and this Board gives the license to practise. In some States this Board holds an examination; in some it accepts certain diplomas and examines others; while in a third class it accepts all diplomas and only examines those who have no diploma and no medical education at all. There are many of this last class practising in the States; and then this State Board, when its examinations are conducted with the laxity which they almost always are, comes to be an evil instead of a blessing, for any one who has passed that examination assumes the title of M.D., and is entitled to practise in this State for ever. This endorsement of the diploma only holds for one State, and if a man lives on the borders of two he must go before the Boards of both States. Most States accept a British diploma. In fact, I think the only exception is New Jersey, which lies on the other side of the river from New York. This State stands almost alone in having no medical school, and its State Board holds a regular examination which every one must pass before practising in the State. This stringent law, which is only of recent enactment, if strictly applied would prevent New York consultants from practising in this State. After passing this examination one must register at the Board of Health and also at the County Board of Health in as many counties as he intends to practise in. From the Board of Health he gets his book of certificates, one of which he is required, under penalty, to send in thirty-six hours after a birth or death. American degrees are not registrable in this country, but there is a matter of practical interest and importance to our General Council to which I am glad to have the opportunity of calling attention. Men, after taking a degree in America, come over here, and after a year or two of study, go up for one or other of our lower qualifications. To do this they have to produce certificates of attendance, and this is the point to which I wish to draw attention. It is most manifestly unfair to our students that attendance three times a week on anatomy lectures, with often the merest farce of dissecting, should entitle them to a certificate equal to that which is required by our Boards here. I saw in one school a certificate being filled up for the triple qualification which was nothing less than a deliberate falsehood. There was not in the school such a course on Anatomy as the student was certified to have attended. I think this matter ought to be looked into, and that if these certificates are to be continued, that a commission should be appointed by the Council to examine and inquire from which schools they should accept such certificates. The autocratic government of the medical profession is theoretically preferable to ours. Each county[1] has its county medical society, and every respectable medical man is a member of this society. It has the power of expelling from its membership any one who commits a serious breach of its laws. I think that this power, combined with that of refusing a resignation, would be a useful one in the hands of our British medical branches. These county societies each send delegates to the State Medical Society, which in turn sends members to the Federal Council, so that the Supreme Council is directly representative of the practitioner. This system I think we might well take a lesson from, and have our General Medical Council elected in a similar way, for I am quite convinced that a council elected entirely by the profession could be thoroughly trusted in no way to lower the standard of the profession.

I had the opportunity of being present at a meeting of the New

[1] A "County" is generally a tract of land about 10 miles square.

York County Medical Society, which was very interesting. The Society employs a lawyer, who takes up a case of illegal practice, and after warning, proceeds, if the practice is not stopped, to prosecute. The subject of State examination and the endorsement of diplomas was discussed; and one felt that, owing to the constitution of the Society there was more result to be hoped for from the discussion than from a similar one by our branches. This Society has also a Committee of Hygiene, which reports to the State on any nuisances, and has with its report the weight of the whole profession behind it. There was a lengthy report on the subject of public baths, in which it was convincingly argued that shower or rain baths were much more healthy and economical than the old-fashioned plunge. The Committee had also a report on schools, and the account of the condition of the schools in New York made one hope that it was the exception and not the rule in the States. The dark, ill-ventilated, gas-lighted rooms which were described were calculated more to injure the physical than to improve the mental capacity of the pupils. In the newer States, however, the schools are large, well-built, well-lighted, and well-ventilated rooms, for in every district a certain proportion of land is laid off as school lots, and as the district grows the value of the land rises, so that in many parts the school committees have more money than they know what to do with.

I now come to what I warned you of in opening my remarks, the Presbyterian "finally," and the likeness will be more marked in that I propose to point out what it seems to me we may learn from the profession in America. The subject of etiquette is one from which we may learn something, whether you look on it in the light of something to copy or as the teetotallers' "awful example." It appears to me that we had better largely abandon anything of the sort, and treat every one who comes to us without considering our neighbours, as is done in the States, at the same time meeting on perfectly friendly terms, on the principle of "what everybody does must be right," or else that we should "lengthen the bonds and strengthen the stakes" of our present system, and make it more real and effective than it is at present. I do not hope anything from any elaborate code of ethics. The best definition of medical etiquette I ever heard was in an address to the graduates by Sir Douglas Maclagan. It was quoted by him from a very much older source, "All things whatsoever ye would that men should do to you, do ye even so to them." I believe that the vast majority of men work on this principle, and I am of opinion that the majority should have the power to slightly alter and say to any one who wilfully acted otherwise the famous words, "Erring brother, go in peace." Practise medicine as the trade which you make it, but practise it *alone.* I think we may learn also from their government of the profession to make our societies more representative and more powerful for good than they are at present. Had we in Cumberland a county society divided into districts, of which societies every respectable medical man was a member, we could very soon raise the standard of the profession and weed out the outsiders.

In the non-teaching hospitals I do not see why we should not follow the example of similar hospitals in America, and have a broken service. As one who may speak with an entirely disinterested view of the matter, I must say that I think it very hard that the hospital advantages of this city should be confined to so few men, when by having a six months' service the number could be at once doubled and the present holders retain their positions.

In concluding my remarks, and bidding adieu to the Society, I must express my hopes for its increased prosperity and usefulness. I read some time ago in the *Edinburgh Medical Journal* that at the Medico-Chirurgical Society of Edinburgh it was the custom for members to suggest subjects for discussion, for the committee to select one, and ask a member to open a discussion on that subject. Surely what is proper for the Medico-Chirurgical Society of Edinburgh cannot be *infra dig.* of the Carlisle Medical Society. As one who has borne the burden of the secretarial duties, I can assure you that I often wished we had some such arrangement, which would, I am sure, be a success. Once more then, gentlemen, I repeat my thanks for the honour you have done me in electing me to this position, and my regrets that I am not to be longer with you. My interest will always remain in the Society, and I wish to the Carlisle Medical Society both now and in the future—God speed.

IX.—ON A CASE OF MYXŒDEMATOID SWELLING OF ONE-HALF OF THE BODY IN A SPORADIC CRETIN.

By John Thomson, M.D., F.R.C.P.E., Extra Physician to the Royal Hospital for Sick Children, Edinburgh.

I. J., aged a year and seven months, brought to the New Town Dispensary in March 1890.

Complaint.—Swelling of the right side of the body (including the head, trunk, and limbs), which was noticed shortly after birth.

Family History.—The parents are not related to one another; they were both born and brought up in Edinburgh; there is no family history of goitre or idiocy on either side. The father (a labourer) is strong and healthy. The mother is neurotic and excitable; she has mitral disease of rheumatic origin, and is very subject to sick headaches. After rheumatic fever, seven years ago, she used to take "fits," which for five years occurred about every three weeks. During these attacks she was quite unconscious, but was not convulsed, and she never bit her tongue or passed water in them. She had many of these during her pregnancy, which began sometime before marriage, and she was subject at the same time to much mental distress and hard work. Several of her relatives are very "nervous," one of her sisters has paralysis of the one side, and her mother's brother became insane at the age of twenty. The patient is her first child; there is a younger one, aged four months, who is perfectly healthy and well-formed.

Patient's History.—She was born at full time. The labour was a tedious one, the pains lasting twenty-eight hours; no chloroform or instruments were used. The swelling of the right side of the face and right limbs was noticed within a week of birth. It has remained about the same until lately, when the mother thinks it has increased a little. The swelling of the face is said to be most marked in the morning, and the eyes sometimes seem almost closed when she awakes. She has had no illness of any kind. She was vaccinated when six months old, and the swelling in front of the left axilla was noticed the week after. Teething began at nine months, at which time she could stand with some support, which she cannot do now.

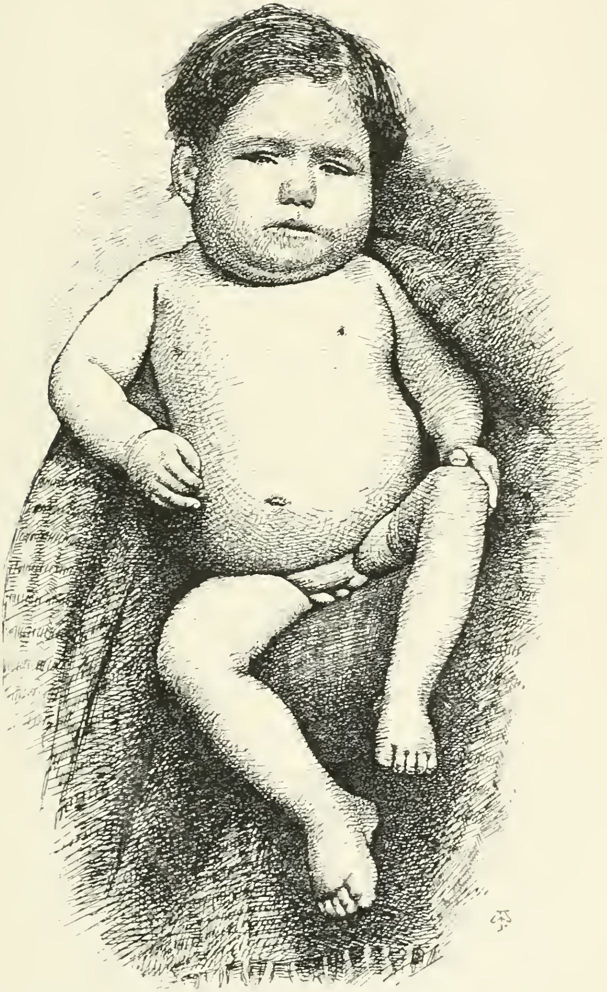
State on Examination.[1]—The child is somewhat under the normal size (28 inches in length). Her complexion is pale and pasty, and her skin rather thick and coarse. There is a slight eczematous eruption over the chin and round the mouth. The face is large and swollen, the right side being more so than the left. The eyes, nose, and mouth are small. The right eye is distinctly less open than the left one, owing to the swelling of the surrounding tissues being greater on the right side. The cranium seems rather large (horizontal circumf. = 18½ inches) in relation to the body, but it is tolerably well formed. The anterior fontanelle is widely open (measuring about ¾ inch square). The hair is of a dark brown colour, and is plentiful and soft, its growth on the two sides of the scalp being equal. There is a considerable growth of small hairs in the interscapular region. The right ear is much thicker than the left one, and has a translucent, waxy look very like that of a patient with myxœdema.

The neck is extremely short; in fact, there seems to be no neck at all, owing to the large double chin formed by the mass of fat immediately under the jaw. In this fat a few enlarged glands are found. The front of the trachea can be distinctly felt, and, as far as can be made out, there is nothing to be discovered in the position of the isthmus or lobes of the thyroid body. The posterior angle of the neck on each side is occupied by a rounded soft projecting mass of fat. That on the right side is as big as a walnut, and contains in its substance two enlarged lymphatic glands; while that on the left is about two-thirds that size, and contains no enlarged glands. Just in front of the left axilla there is another similar fatty tumour, rounded in shape, and fully twice the size of a large walnut; four or five enlarged glands can be felt in its substance.

The tongue seems a little large, but otherwise it looks normal,

---

[1] The accompanying Plate has been drawn by Mr John Williamson from a photograph, and is a very accurate representation of the child.



and it is quite symmetrical. She has a habit of frequently sucking it and licking her lips. The teeth are good, but few, *viz.*, four upper and three lower incisors. The palate is normal in shape—not abnormally high, and quite symmetrical. The tonsils are large and pale; they seem equal in size.

The thorax is tolerably well formed; there is no beading of the ribs. The heart and lungs are normal. The abdomen is large, hard, and resistent; its walls seem thickened, especially on the right side; no ascites. Liver and spleen not enlarged; no large glands felt. Her appetite is good; she eats largely. She seems to have no control over her bladder and rectum, and she passes water and fæces "as she sits." The urine is normal; no albumen.

External Genitals.—The labia majora are very prominent, the right one being the larger of the two. Between them a body projects which is about the size of a child's thumb; this is found on closer inspection to be the right labium minus, which is six to eight times the size of the left one.

Upper Extremities.—The left is normal; the right is considerably larger, although no longer than the left. The enlargement seems to be due to a thickening of the subcutaneous tissue, which resembles ordinary œdema at first sight, but does not pit on pressure; it is less marked on the upper arm, and more so on the forearm and hand. The hands are rather narrow, and the fingers are long and slender, those of the right hand not being noticeably thickened.

Lower Extremities.—The left is normal, with the exception of a very slight puffy swelling of the instep. The right is swollen like the right upper limb, but to a greater degree. The following measurements will give some idea of the amount of enlargement:—

Left thigh at level of perineum			—circumference,	6½ in.
Right ,,	,,	,,	,,	7¾ in.
Left calf at thickest part			,,	5¼ in.
Right ,,	,,	,,	,,	5½ in.
Left instep	,,	,,	,,	4¼ in.
Right ,,	,,	,,	,,	5 in.

The instep of the right foot is globular, like that of a patient with acute Bright's disease, and the toes of that foot are much thicker than those of the left. There are no indications of dilatation of the lymphatic vessels in the skin anywhere. The muscles are flabby and poor, and the child seems to have little strength in her limbs or body. She used to be able to stand with slight help, and could pull herself about on the floor. Now she can do neither, and cannot even sit alone comfortably unless she is propped up. There does not, however, seem to be any paralysis—merely debility; and the affected side is no weaker and no less used than the other, so far as can be made out.

Intelligence.—She is always dull, and takes little interest in most things going on around her, but she is extremely fond of animals.

She seldom smiles—occasionally, when "danced" up and down in her father's arms. She is rather fretful and difficult to please, and is jealous of other children. She is unnaturally shy, and seems much disconcerted if she sees she is being looked at, even from a distance. While she certainly cannot be said to be idiotic, her mental capacity appears decidedly below that of a healthy child of her age, and her shyness is distinctly morbid in degree.

Treatment.—She was ordered cod-liver oil and a tonic, and her diet was regulated.

Progress.—Under this treatment she improved considerably in strength, and became brighter and less shy.

July 10, 1890.—In her usual health.

July 18, 1890.—Died of acute pneumonia after a few days' illness.

Permission to inspect the body after death, even in the most literal sense, was absolutely refused.

Remarks.—The very unfortunate circumstance that no post-mortem could be obtained diminishes, of course, the value of this case exceedingly; but still, even in its incomplete form, it seems to present enough features of interest to make it worth preserving.

We may consider briefly three of the questions which the clinical facts suggest.

Firstly, What was the nature of the enlargement of the right side?

As far as could be ascertained the swelling was due, in all positions in which it existed, to increase in bulk of the skin and subcutaneous connective tissue only. There was no difference in the size of the bones or muscles or other structures on the two sides; and no difference could be found in their functional activity in any respect. The skin of the affected parts had an appearance strikingly suggestive of that in myxœdema, and this similarity of texture, especially when found along with apparent absence of the thyroid, with fatty tumours, and with mental torpidity, suggests the probability that the structural change was the same as in that disease. It certainly does not seem possible that the condition could have anything to do with œdema neonatorum.

Secondly, What can be the cause of this curious exactly unilateral distribution?

Evidently no affection of the lymphatic or blood-vascular systems can account for it. We must look to the nervous system, though to what part of it it is difficult to say. One may *guess* that some intra-uterine damage to the cortex of one cerebral hemisphere, or possibly to the sympathetic nerves or ganglia, might give rise to it.

I have not been able to find any case published like this one,—unless it be possibly one of which Ahlfeld[1] gives an outline figure, with almost no details. A number of cases, however, of congenital abnormality of different kinds, strictly limited to one side, are reported, and it is interesting to compare them with one another. Among other things, it is very interesting to find that the unilateral abnormality may in different cases affect quite different tissues. For example:—

---

[1] *Die Missbildungen des Menschen*, p. 37; and *Atlas*, Taf. XXIII. fig. 1.

a. Mr Jonathan Hutchinson figures and describes in his *Archives*[1] the case of a Hindu with congenital white streaks of one side of the body only. Apparently only the superficial skin was implicated.

b. In our case the deeper parts of the skin and subcutaneous tissue were affected.

c. Prof. Demme of Bern[2] has recently published a drawing and description of an infant with very marked enlargement of the whole left side, which was found post mortem to be due to a peculiar form of hypertrophy of all its muscles (including the left half of the tongue), along with corresponding increase in thickness of the subcutaneous tissue. The right side of the cranium was enlarged to make room for the enlarged right side of the brain, but otherwise no asymmetry of the osseous structures was found.

d. Prof. Humphrey[3] has put on record notes and a photograph of a young woman the right side of whose body was the seat of congenital hypertrophy. In this case all the bones of the affected side were much enlarged, the muscles were bigger and stronger, and the right breast, nipple, and tonsil also were larger than those of the other half of the body.

These cases seem to suggest that there must be separate nervous structures governing the nutrition of the different anatomical systems (cutaneous, muscular, osseous, etc.), and that in some, probably in all cases, these must be double—for the two sides of the body.

Thirdly, What is the nature of the case?

Apparent absence of the thyroid body, along with the presence of fatty tumours in the posterior triangles, forms a very characteristic clinical feature in most cases of sporadic cretinism and in some of myxœdema, and they do not seem to occur together in any other form of disease. Their presence in this case, therefore, constitutes a very strong argument in favour of its being closely allied to these conditions. The appearance of the skin on the affected side and the mental dulness seem further to point in the same direction.

On the other hand, the case certainly differs very much in certain respects from one of ordinary sporadic cretinism. For instance, the general physiognomy is different, we miss the big projecting lips and the characteristic largeness and coarseness of all the other features; the extremities are rather narrow instead of being broad and coarse; and the hair is soft and plentiful.

While admitting these points of difference, however, it seems to me that we must regard the case as closely related to sporadic cretinism and myxœdema, though the exact relationship is impossible to define.

---

[1] No. 1, Plates I. and II.

[2] 27*th med. Bericht über die Thätigkeit des Jennerschen Kinderspitales in Bern*, p. 44.

[3] *Journal of Anatomy and Physiology*, iv. p. 226.

Part Second.

REVIEWS.

Cornil et Babes. Les bactéries et leur rôle dans l'étiologie, l'anatomie, et l'histologie pathologiques des maladies infectieuses. Troisième édition refondue et augmentée. FELIX ALCAN, Editeur. Paris, 1890.

THE first edition of this work appeared in 1885, the second in 1886. At that time bacteriology was scarcely the science it has now become, reforming etiology, histological anatomy and pathology, and hygiene, and rendering, as it will in the future continue to do, the greatest possible services to preventive medicine. It is sufficient proof of the great popularity of this work that a third colossal edition has become necessary. It now appears in two volumes of 582 and 608 pages respectively. The authors have recast completely many of the chapters and added numerous new ones. For example, Pneumo-Enteritis of the Hog, Contagious Mammitis of the Milch-cow, Hæmorrhagic Septicæmia, Urinary Septicæmia, Actinomycosis and Tetanus, maladies the microbic origin of which has been recently settled. An appendix contains what was known at date of the micro-organisms of epidemic influenza; a short chapter on the ptomaines engendered by pathogenic microbes; the improvements employed by Pasteur in his intensive methods of inoculation against rabies, and the results obtained by Babes, of the Bacteriological Institute at Bucharest, by his preventive inoculations; and the microbes of the mucous secretions of bronchitis, of which six species, dubbed "bacilles mycogènes," are described under the headings of form, mobility, colorability, grouping, cultural behaviour on gelatine, gelose, and potatoe, and their pathogenic properties when injected into animals such as mice, rabbits, and guinea-pigs. Chapter 10 of the first volume gives an interesting history of the attenuation of virus and the various theories of how immunity is brought about; and in the main the authors seem to agree with the general theory of phagocytosis, as propounded by Metschnikoff.

The volume contains 385, coloured and in black, illustrations intercalated in the text, and twelve separate plates. Of the plates four are photographic representations of the principal types of micro-organisms; none of the figures on those plates can be called very good photographs, and some of them are actually bad, witness Figs. 5, 22, 23. Of the drawings so abundantly interspersed in the text, many are not at all good, and compare very disadvantageously indeed with the clearness, precision, and delicacy of finish of those illustrating Baumgarten's *Pathological Mycology*.

The authors have, however, produced a work second to none in interest for the bacteriologist, and a genuine "first aid" to him in all the technique and instrumentation of his science. They have diligently and conscientiously gathered together an amount of material from all quarters of the bacterial world, which, on account of this very richness, will make their book an indispensable one for reference, and will supplement where Baumgarten and Flügge have only touched in passing or altogether omitted. Still, the book would have been a better one had there been in it more of objective, sifting criticism, and not a mere collation of the literature quoted; and one would suppose that Cornil and Babes are the very men who could criticize judiciously. The histological-pathological parts of the work are very carefully elaborated. Altogether the two volumes contain the completest record of everything appertaining to bacteriological science that has ever appeared, or is likely to issue from the press in the future.

Die Protozoen als Krankheitserreger. Von Dr L. PFEIFFER, Geh. Med. Rath. und Vorstand des Grossh. Sächs. Impfinstituts in Weimar. Jena: Gustav Fischer: 1890.

ACCORDING to Pfeiffer (*Centralblatt für Bakter. u. Parasitenkunde*, 8 Band, s. 762) the most important characteristic of the protozoa consists in the unicellularity of their body, which condition persists during their lifetime. Although more than one spore may be present in the body, a corresponding division does not take place into as many cells. From this results the absence of organs in the protozoic body. All of them can live only in a moist or fluid medium. Deprived of moisture, nourishment, or oxygen, the body contracts into a rounded, persistent cyst, an event which is generally accompanied by propagation of a generation of spores which defy dessication and can be transported by the winds. Colony-formation and massive penetration of these spores in milliards into large enough cells is a further peculiarity. The young parasites differ less in form and size than in their mode of life. In youth they are all parasites of specific cells; there is present a sort of larval condition in which, by means of either pseudopodes or flagella, they move and fix themselves in cells, with loss of their former mobility. This "swarming" stage, hitherto unknown, is not awanting in the coccidia and amœbæ, a fact which is of far-reaching significance for the interpretation of the etiology and clinical course of infectious diseases. Millions of those spores bring about the most extensive cell-infections and cell-destruction, as witness the pebrine of the silkworm and the coccidia disease of rabbits.

Attempts to isolate, by means of pure cultivations, the specific bacteria of a large group of contagious and miasmatic diseases, such as variola, scarlatina, vaccine, etc., have hitherto totally failed, and the recognition of this fact has caused bacteriologists to study the protozoa in man, animals, and plants, in the hope that this comparative examination might lead them nearer to the desired end.

The author of this work, a practising physician, has found the time and had the energy to examine for himself in a field comparatively unexplored. A compendious book of the parasitic protozoa has not yet been written for the use of medical men, and the literature of the subject is as scanty as it is indispensable. The author is modest, and what of new he has advanced in this book regarding the cell-parasites he holds reserved for competent zoologists to interpret and perfect, and his aim has been to tell them on what sides, from the view of the practical physician, the need for enlightenment lies. For years the author has sought for bacteria or some other cell-parasite in varicella, vaccine, variola, and herpes zoster. He has not obtained conclusive proof that the skin-trouble of herpes comes from the side of the blood; but he has firmly established the fact that a hypertrophy, sometimes even monstrous, of particular epithelial cells can be caused by klossia, eimeria, coccidium, and sporidia, and that the same hypertrophy repeats itself in zoster, variola, ovine, and vaccine disease of the skin. He believes that the stranger in the cells betrays its nature by this comparative examination.

For the interesting minutiæ and details of the book we must refer to the original, which is divided into nine parts, and is illustrated by thirty-four woodcuts and one plate.

Part 1.—Introduction. 2. Locally circumscribed Epithelial Infections by Coccidia and Free Living Gregarinæ. 3. Sporidia Infections. 4. Endothelial, Hæmocytic, and Leucocytic Infections. 5. Characteristics of the Cell-Infections and Hypertrophies called forth by Protozoa. 6. Epithelioma Contagiosum and Fowl Diphtheria. 7. The Alterations undergone by Epithelial Cells in Herpes Zoster and Variola. 8. Explanation of the Plate schematically representing the Developmental Processes of Sporozoa. 9. Literature.

The author made little use of reagents, and coloured his preparations as seldom as possible with staining fluids. When he used any of the latter he preferred hæmatoxylin. For the observation of the motile phenomena he constructed a simple stage, which is figured, and warmed it with water. The lens used was the new apochromatic objective of Abbé. Many of his drawings remind one of those figured by Dr W. Russell of this city in his paper on the "Organism of Cancer," which paper appeared in the number of the *British Medical Journal* for December 13th, 1890.

Elements of Practical Medicine. By ALFRED H. CARTER, M.D. Lond.; Member of the Royal College of Physicians, London; Physician to the Queen's Hospital, Birmingham; Emeritus Professor of Physiology, Queen's Hospital, Birmingham, etc. Sixth Edition. London: H. K. Lewis: 1891.

THE fact that this well-known handbook of Medicine has now reached its sixth edition is good evidence of its merit and of the fact that it supplies a want. In this edition Dr Carter has had the assistance of Dr G. F. Crooke and Mr Malcolm Morris in the preparation of the sections on General Pathology and Diseases of the Skin respectively. These sections have been brought well up to date, except the paragraphs on the relation of micro-organisms to disease, which might well have been more particular. The section on Diseases of the Urinary Organs is too sketchy; the others are all that could be desired.

Fever; its Pathology and Treatment. By HOBART AMORY HARE, M.D., B.Sc., Clinical Professor of Diseases of Children, and Demonstrator of Therapeutics in the University of Pennsylvania. No. 10 in the Physicians' and Students' Ready Reference Series. Philadelphia and London: F. A. Davis: 1891.

THIS volume, originally the essay to which the Boylston Prize Committee of Harvard University awarded the prize in 1890, is not so much a dissertation on fever—only ten pages, indeed, being devoted to that subject—as an essay on antipyretics. Of these antipyrin is first discussed, many authors quoted, and, from both experimental and clinical evidence, the opinion arrived at, that it is the best antipyretic which we possess at present. Its action on the circulation is said to be *nil;* but a long list of the untoward effects now and then observed after administration of the drug is given, many of which are notes on cases of cardiac failure and collapse. Antifebrin, thallin, and phenacetin are dismissed with fewer words, the last of the three being, however, especially recommended as an analgesic. The hæmolytic action of all these drugs is touched upon, and a word said about the appearance of the urine; but this part of the subject has not received nearly the attention which it deserves. The effect of these remedies on the blood-pressure is shown in some very good charts; and as a compendium of what is at present known about these recent antipyretics the book may be of some use.

A Practical Text-book of the Diseases of Women. By ARTHUR H. N. LEWERS, M.D. Lond., M.R.C.P. Lond. Third Edition. London: H. K. Lewis: 1891.

WE note the appearance of the third edition of Dr Lewers' text-book on Gynæcology. This fact shows that the book has made a place for itself amongst students and practitioners. There are not many alterations of moment in this edition. A few more illustrative cases have been added; and in the chapter on Dysmenorrhœa the author has largely followed the lines laid down by Dr Champneys in his recent Harveian Lectures on Painful Menstruation. The author speaks guardedly of the results of the treatment of fibroids by the Apostoli method, and in this respect he would seem to reflect the general opinion of the medical profession at the present time. The book is well worthy of the support it has received, and we congratulate the author on the appearance of this edition.

On Painful Menstruation. By FRANCIS HENRY CHAMPNEYS, M.A., M.D. (Oxon.), F.R.C.P. London: H. K. Lewis: 1891.

THIS book contains the Harveian Lectures on Painful Menstruation delivered by Dr Champneys last year. The first lecture is occupied with an account of normal menstruation, and of the changes in the uterus and other pelvic viscera during the monthly cycle. In attempting to define dysmenorrhœa, the author very rightly refuses to regard pain outside the "genital sphere" as dysmenorrhœa, and he also notes that women vary much in their capacity for feeling and for bearing pain, and in their power of appreciating it. Dr Champneys boldly disposes of nearly all the so-called varieties of dysmenorrhœa—the gouty, the chlorotic, the ovarian, *et hoc genus omne*—and discusses only the two classes of —(1) the spasmodic, including membranous; and (2) the inflammatory. He points out that inflammatory or congestive dysmenorrhœa is a misnomer, as the pain is nearly entirely inter-menstrual, and is really relieved during menstruation.

The second lecture is entirely devoted to a consideration of that curious variety of spasmodic dysmenorrhœa which is known as membranous. Into this subject Dr Champneys goes most fully, and he appends a useful bibliographical table of cases which have been from time to time reported. He considers that the passage of a membrane at the menstrual time is probably much commoner than is believed, and has found that it is not always accompanied by pain. When dysmenorrhœa is present, its cause is considered to be—(1) colic of the uterus, excited by a foreign body; and (2) colic super-excited by the passage of this foreign body, *i.e.*, the membrane, over a specially sensitive part, *i.e.*, the os internum uteri.

Into the differential diagnosis between membranous dysmenorrhœa and abortion the author goes with much minuteness, and this portion of the book is especially worthy of study. The treatment he regards as most unsatisfactory, but he would feel tempted to try scraping the uterus shortly before the menstrual period, and the use of a somewhat neglected drug—castoreum. Even pregnancy going to the full term is sometimes insufficient to cure this form of dysmenorrhœa.

The third lecture is devoted to spasmodic non-membranous dysmenorrhœa, and in it Dr Champneys argues strongly against the theories that hold the pain to be due to obstructed menstrual flow, either from stenosis or from flexions of the uterus. The condition he regards as essentially a neurosis, with motor phenomena (colic) and vaso-motor phenomena (scanty or greatly varying flow), and the treatment advised is based upon this conception. "The local treatment of diseases of women," it is remarked, "is only justifiable when it is necessary."

The lectures contain many very necessary protests against present-day methods of tinkering with the uterus, more especially in unmarried women, and they ought to be widely read by the profession. The get-up of the book is excellent.

A Manual of Diseases of the Nose and Throat, including the Nose, Naso-Pharynx, Pharynx, and Larynx. By PROCTER S. HUTCHINSON, M.R.C.S., Assistant Surgeon to the Hospital for Diseases of the Throat. London: H. K. Lewis: 1891.

THIS small work, which consists of only 124 pages, is written, we learn from the preface, chiefly to meet the requirements of post-graduates who wish to study this special branch of Medicine. We shall be surprised if even the average under-graduate is content with the information to be derived from its pages. The greater part of page 41 is taken up by a prescription, given *in extenso*, for a very ordinary aperient mixture, while in other places points of practical importance are conspicuously absent. For example, menthol, so largely used now in throat affections, and Gottstein's or Hartman's curette, so much used in the removal of adenoid vegetations, are not even mentioned. The fused bead of chromic acid does not appear to be known to the author, for he tells us that "a saturated solution of chromic acid answers very well" as a substitute for the electric cautery.

The best portion of the book is that devoted to lupus and paralysis of the larynx. The descriptions of these conditions are clearly conveyed, and the illustrations which accompany them are excellent.

The author is evidently not prepared to admit that primary tubercle of the larynx has ever been demonstrated. We are also surprised to learn (page 109) that the best way to apply the lactic acid treatment to the larynx is by means of a fine spray, and no mention is made of the treatment of the tubercular larynx as carried out by Heryng, Krause, and others.

Other statements or omissions might be referred to, but enough has been said to show that the book is superficial, and is not likely to meet the requirements of those to whom it is specially addressed.

Botany Notes for Students of Medicine and Science. By ALEXANDER JOHNSTONE, F.G.S., Lecturer on Botany, School of Medicine, Edinburgh. Edinburgh: E. & S. Livingstone: 1891.

THESE "Notes" contain much valuable information in a condensed form, and will be of much use to students, especially to those beginning the study of botany. The book is largely a compilation from other and larger works. As the author tells us in his preface, he has "made ample use of Sach's *Text-Book of Botany*, Prantl and Vine's *Text-Book of Botany*, M'Nab's *Botany*, and M'Alpine's *Atlases and Short Notes for Biological Students.*" Nevertheless the author has produced a book which will be of much use to those beginning the study of this interesting branch of science.

The nomenclature of the "Natural Orders," in many cases, is antiquated, and even the classification of the Natural Orders is not such as is adopted by the best botanists in the present day.

Notes on the Additions made to the British Pharmacopœia 1890. By FREDERICK T. ROBERTS, M.D., B.Sc., F.R.C.P., Professor of Materia Medica and Therapeutics, and of Clinical Medicine, at University College. London: H. K. Lewis: 1891.

PROFESSOR ROBERTS in these Notes has produced an excellent supplement to his well-known and valuable Text-Book, *The Officinal Materia Medica.*

New Official Remedies B.P. 1890—*Supplement to "Materia Medica and Pharmacy."* By A. W. GERRARD, Teacher of Materia Medica and Pharmacy to University College, etc. London: H. K. Lewis: 1891.

THIS "Supplement" is a useful addendum to the author's *Materia Medica and Pharmacy.* Most botanists in the present day would include the genus "Datura" under *Solanaceæ* and not *Atropaceæ.* The specific name of this plant is always spelt with a capital—thus, Datura Stramonium.

The Medical Practitioner's Cash Book. Designed by Dr ILLINGWORTH, Clayton-le-Moors.

DR ILLINGWORTH has sent us a specimen page of this *Cash Book*, filled up with a great variety of items. It is especially designed for those who keep an open surgery along with carriage, horses, coachman, etc., and therefore can never be widely used on this side of the Border. The *Cash Book* is, however, well designed, and may prove of great use to many in England, for whom it is evidently specially arranged.

Thomas Sopwith, M.A., C.E., F.R.S., with Excerpts from his Diary of Fifty-Seven Years. By BENJAMIN WARD RICHARDSON, M.D., LL.D., F.R.S. London: Longmans, Green, & Co.

"Here is a dear, a true industrious friend."—*I. Henry IV.*

THIS is a charming biography of a delightful man, or rather autobiography, for Dr Richardson, with a wise self-effacement, lets his subject speak for himself in diary and letters. In these days when pessimism is a fashion and grumbling a cult, it is refreshing to read of a fine old warmhearted Englishman from canny Northumberland, who went from Dan to Beersheba, and found everything *not* barren, who seems rarely to have had an ache or a pain, a failure, or an introspection; who in three marriages found each new wife surpassing her predecessor, and each new jaunt or holiday better than the last,—a wholesome, energetic, successful man, who had hosts of friends, and never made an enemy; had his biographer not been wise, his readers might have suggested ostracism. But Dr Richardson has made the book so easy to read, has picked out many an interesting theory, and introduced us to so many pleasant people, that it can be read with care and finished with regret.

Guy's Hospital Reports, Vol. XLVII. Edited by A. DAVIES COLLEY, M.A., M.C., and W. HALE WHITE, M.D. London: J. & A. Churchill: 1890.

THE first place in this year's volume of *Reports* is devoted to an account of the life of the late Sir William Gull, accompanying which there is a characteristic portrait reproduced by the autotype process. The scientific papers which follow cover a wide field of original work, both clinical and pathological. Mr Davies Colley records a number of cases of malignant pustule in which considerable success resulted from the use of ipecacuanha; also a typical case of Internal Derangement of the Knee-joint. Dr Washburn furnishes a careful report on the Bacteriology of Glanders, and the notes of a fatal case of the disease admitted to the wards of the Hospital. The same author, along with Mr Jacobson, describes two cases of Urinary Tuberculosis, in which experimental inoculation was found a valuable aid in diagnosis. Dr Goodall's analysis of 262 cases of Chorea admitted to Guy's during the years 1879-89 is a valuable continuation of the work of the late Hilton Fagge in the same department. Dr Goodall has another paper, in which are described the histological changes in the cord in a case of Compression Paraplegia. Mr Targett's paper on Sarcoma of the Tongue is a *résumé* of all the published cases of this comparatively rare disease. Mr Clement Lucas writes on Fracture of the Coracoid; Dr Hale White on Primary Malignant Disease of the Liver and on Pernicious Anæmia; Dr Goodhart on Bruits; Mr Evans on Antiseptics and Disinfectants; Mr Golding Bird on Wry-neck and Facial Hemiatrophy; Messrs Starling and Hopkins on the Changes in the Urine in Phosphorus Poisoning. Lastly, there is a paper from the pen of Mr Tubby on the Pathology of Acute Infective Periostitis and Acute Necrosis of Growing Bone.

We have read this last paper with some interest. The author contends that the disease always begins at one or other epiphysial junction of a long bone, and then spreads by continuity to the periosteum and medulla respectively. The operative treatment recommended is based upon this view of the pathology of acute necrosis; it is regarded as essential in every case of acute periosteal suppuration that the bone be trephined in the region of the epiphysial junction. We are unable to concur with the author's views. We have been in the habit of examining recent specimens of acute necrosis by making frozen sections of the affected bone, and we have found that in those cases which result in necrosis the suppurative inflammation does not begin at any one point, but that multiple foci of suppuration develop simultaneously throughout the medulla and beneath the periosteum, as one would naturally expect, seeing that the microbes reach the bone by way of its arteries.

We are also unable to agree with the author in his contention that the skin is the chief channel of ingress of the micrococci into the blood; he adopted this view because he found the sweat ducts in a case of acute necrosis crowded with staphylococci. Other observers, who have found the staphylococci in the sweat glands and in the sweat, came to a different conclusion, viz., that the skin was one of the main channels of their elimination.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXX.—MEETING X.

Wednesday, 17th June 1891.—Professor Simpson, *President, in the Chair.*

I. Exhibition of Patients.

1. *Dr John Thomson* showed two children with chronic cerebral lesions. (1.) A little girl with a *lesion near the floor of the 4th ventricle.* The patient was 2 years old, and had been sent to the New Town Dispensary by Dr E. E. Maddox. Her symptoms were—(*a*) complete paralysis of both external recti, with very extreme double internal strabismus; (*b*), paralysis of both sides of the face, rather less marked on the left than on the right side, and on both sides showing this peculiarity—that while the muscles of the lips, cheeks, and forehead were almost absolutely immobile, the eyelids could be tolerably well closed, the orbicularis palpebrarum being comparatively little affected; (*c*), a curious inability to open her mouth, even when her pharynx was tickled she was unable to separate the front teeth more than two-thirds of an inch; (*d*), extreme irritability dating from onset of other symptoms. The child was normal in other respects, with the exception of a chronic

catarrhal condition of the nasal mucous membrane and also presumably of the pharynx. The muscular power of the arms, legs, and body was good, and the eye-muscles (with the exception of the external recti) were normal. Cutaneous sensibility, sight, and hearing were unaffected. The larynx and palate were probably normal. The movements of the transverse muscular fibres of the tongue seemed impaired, but its other movements were pretty free. The intelligence was normal; there was no headache and no vomiting. The urine contained neither sugar nor albumen. As to the onset and progress of the symptoms—the right eye was noticed to turn in suddenly during the last week of last December, the child being very well at the time; the left eye became similarly affected between a week and a fortnight later, and the irritability developed soon after. The paralysis of the right side of the face was first observed in February. The inability to open the mouth appeared about six or seven weeks ago, and at that time was so extreme that the teeth could only be separated about one-fourth of an inch, and there was great difficulty in feeding the child. For the last fortnight iodide of potash had been given, and there had been slight general improvement. The nature of the lesion was very obscure; there was no history of syphilis. The seat of the lesion was evidently near the floor of the 4th ventricle, and it implicated the nuclei of both 6th nerves and also those of the 7th nerves, or else those nerves themselves in the neighbourhood of the former nuclei. The inability to open the mouth was probably to be accounted for by supposing some implication of the adjacent nuclei of the muscular portion of the 5th nerve. (2.) A child, aged 6, *recovering from a tumour in the region of the right crus cerebri.* Fifteen months before, she had been shown to the Society. At that time she had had—(*a*), paresis of left side of the face and of the left arm and leg; (*b*), complete paralysis of the muscles supplied by the right 3rd nerve; (*c*), slight optic neuritis; (*d*), marked mental dulness. Now, the paresis of the left side was considerably less; slight dilatation and sluggishness of the right pupil was all that was left of the affection of the 3rd nerve on that side; the optic neuritis had long ago disappeared, and the child's mental capacity and alertness had almost entirely recovered, so that she took a good place in school and was good at going messages. The treatment had consisted in careful feeding, cod-liver oil, and iodide of iron. The child had gained very much in weight and in general strength. The lesion was regarded as probably of the nature of a caseous mass.

2. *Dr Alex. Bruce* showed two cases of FACIAL AND OTHER NERVE PARALYSIS.

3. *Mr. A. G. Miller* showed—(1.) A case of HÆMOPHILIA with perfect family chart for three generations, showing males all bleeders, and transmission through females only. Patient (boy of 13) had

effusion into right knee-joint six times from slight injuries. Right leg shows an elongation of about an inch, which is due to increase in length of both femur and tibia. (2.) Two cases of EXCISION OF WRIST by Dr Heron Watson's method. One operated on a year ago, with useful hand resulting. Other operated on a month ago, with good movement of fingers. Also bones shown removed from a case operated on the day before. Essential peculiarity of Dr Heron Watson's method is a single ulnar incision, by which no tendon or vessel requiring to be ligatured is cut. (3.) Case of ABSCESS OF THE ANTRUM cured in two months by removal of anterior molar and free irrigation through enlarged socket of tooth. Recurrence of discharge from nose after six months. Frontal abscess diagnosed, and frontal sinus opened. Free irrigation into nose established a cure in two weeks. (4.) Photograph of CHILD on whom laparotomy was performed a year ago for tubercular peritonitis. Child reported perfectly well and attending school regularly.

4. *Dr Andrew Smart* showed a case of critical ALCOHOLIC SINGULTUS, continuous for weeks; recovery; treatment. The patient, a navvy, was brought by the police to Ward VI. on 20th May. His condition was that of collapse, with gravescent coma and continuous singultus; the hiccough, of a distressing and exhausting character, recurring sixteen times a minute. It appeared that, on account of this condition having continued three weeks, the patient had not been able to obtain sleep, or take nourishment, however little, by the mouth without aggravating his trouble. It was accordingly deemed necessary from the outset to suspend absolutely feeding by the stomach, having recourse to nutrient suppositories and enemata; and, with the object of ameliorating the gastric neurosis, morphia—in this case sulphate—was administered hypodermically every three hours, one-third of a grain each time. To permit of this strength of morphia being continued sufficiently long, and to guard against the occurrence of toxic narcotism, chloroform was administered simultaneously with the morphia, either by inhalation or by ingestion—in the latter case 60 minims of the *spirit* of chloroform being given each time. When inhalation was used it was found necessary to continue it until it arrested hiccough, and this usually did not occur before chloroform narcosis was induced. We succeeded, by these methods, in arresting the continuity of the singultus, and after forty-eight hours continuance, day and night, the patient had gained seven hours' sleep. By the sixth day diaphragmatic spasm was completely arrested, and, by the ninth, feeding by the mouth was gradually resumed, the patient thereafter progressing towards recovery. For twelve days the patient was absolutely fed by rectum. This method, during the whole course of the case, was well tolerated by the bowel, and so carefully carried out by the nurses, in reference to details, as to have been rendered perfectly successful. The case is instructive as

representing the severe and usually fatal type of singultus connected with chronic alcoholism.

5. *Mr Caird* showed a case in which the METACARPAL OF THE THUMB HAD BEEN REMOVED by Mr Chiene for epithelioma.

6. *Dr Alex. James* showed a patient with DISPLACEMENT OF THE HEART due to lung disease. This patient, a man aged 44, had been rowing in a boat race nine years previously, when he states he felt "something give way" in his right side, and at once became so faint and weak that he had to be carried home. Next day he coughed up a large quantity of blood. In the course of a few weeks he recovered; but he states that he has had a cough, and once a year an attack of hæmoptysis, ever since. This cough and hæmoptysis have been slight, and his general health has been perfectly good until about a year ago, when he had an attack of influenza. Since then the cough has been much worse, he has been losing flesh, and he has suffered from back pain and increased frequency of micturition. At present physical examination shows, with slight supra-clavicular hollowing, extensive fibroid phthisis of the right upper lobe, and a small quantity of pus and albumen in the urine. The diagnosis is, therefore, chronic tubercular disease of the right lung and probably slight renal pelvic or prostatic tubercle. The peculiarity is, however, the very great displacement of the heart to the right. Pulsation is visible in the 2nd, 3rd, and 4th interspaces to the right of the sternum. The locality at which the greatest displacement of the heart to the right can be recognised is the 4th interspace. Here pulsation can be felt, and percussion dulness of the heart can be elicited at the right nipple line. The left lung is in a condition of hypertrophous emphysema, and a resonant note is elicited by percussion over the normal cardiac area to the left of the sternum. This patient was sent to me at the Infirmary waiting-room as an example of "dextracardia" in which none of the other viscera were transposed. The condition is of course not congenital, but due to the lung disease. Although of course some cardiac displacement is a usual associate of all chronic phthisical lung disease, this is the third example of excessive displacement which I have met with. In all of these there was a history of rack or strain.

7. *Mr Caird* showed—(1.) A case of EXCISION OF EXOPHTHALMIC GOITRE. The patient, W. N., æt. 25, came to the Edinburgh Royal Infirmary from a limestone district in the North of England, where goitre is prevalent. He had suffered from a swelling in the neck for four years. Of late it had grown with rapidity. He suffered from palpitation, dyspnœa, and dysphagia. There was a large cystic goitre which extended from the hyoid to beneath the manubrium sterni, and which had forced the trachea and œsophagus to the left of the middle line. The eyes were markedly protruding,

the pulse-rate very frequent (116 to 124). Excision of the large cyst and right thyroid lobe was performed after Kocher's method. The stitches were removed on the 7th day, and the patient got out of bed on the 10th day. A year has passed since the operation, and the patient has since enjoyed perfect health. The eyes no longer protrude, the pulse is less frequent, there is no longer any discomfort or dyspnœa. (2.) A case of EPITHELIAL GRAFTING after Thiersch's method. The patient had an extensive granulating area from above the external malleolus over the dorsum of the foot and under the sole. It had been caused by molten iron. Grafting in two sittings had healed the whole in 14 days.

II. EXHIBITION OF SPECIMENS.

1. *Dr William Russell* showed casts illustrating diseases of the LUNGS AND LIVER.

2. *Mr Caird* showed two ABDOMINAL ANEURISMS.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LII.—MEETING VIII.

Wednesday, 8th July 1891.—Dr BERRY HART, *President, in the Chair.*

I. *Dr Underhill* showed the patient on whom he had performed laparotomy for RUPTURE OF THE UTERUS.

II. *Dr Haig Ferguson* showed (1), for Dr Halliday Croom, a specimen of EXTRA-UTERINE TUBAL GESTATION, which had been diagnosed and operated on before rupture. The patient was in the third month of pregnancy, and the size of the fœtus corresponds to this exactly. This is the second case of the same kind which Dr Croom had operated on within six months. Both patients have made excellent recoveries. (2.) A DERMOID TUMOUR OF THE OVARY which he (Dr Ferguson) had removed by abdominal section. The tumour contained fat, teeth, and plates of bone. It was entirely pelvic, and was interesting clinically as it had been mistaken before coming to Edinburgh for a retroverted fundus uteri, as it lay in the posterior fornix. The patient had been treated with pessaries which had aggravated her condition considerably. She made a good recovery from the laparotomy. (3.) A LARGE POLYCYSTIC OVARIAN TUMOUR which he (Dr Ferguson) had removed by laparotomy, without opening into the peritoneal cavity. The tumour, which is partly solid, had no pedicle, and was removed by enucleation. The condition is described in detail in a paper which Dr Ferguson read before the Society on 8th July 1891. The patient in this case also made a good recovery.

III. *Dr Brewis* showed two examples of PYOSALPINX, A PAROVARIAN, and an OVARIAN TUMOUR.

IV. *Dr Underhill* read his paper, entitled THREE CASES OF RUPTURE OF THE UTERUS, ONE OF WHICH WAS SUCCESSFULLY TREATED BY LAPAROTOMY, which appears at page 206 of this Journal.

Dr Brewis said he felt sure the Society was greatly indebted to Dr Underhill for his paper. The Society could only feel proud that its ex-President had been the first man in this country to treat successfully rupture of the uterus by laparotomy. Dr Brewis admired the courage with which Dr Underhill tackled the case, and the dexterity which he displayed in the operation. He had no doubt that the free flushing of the abdominal cavity and the careful stitching of the lower part of the uterus had saved the patient's life.

Dr F. W. N. Haultain congratulated Dr Underhill on the most satisfactory result of his treatment of case No. 3. He had the pleasure of being present at the operation, and could testify to the dexterity and *savoir faire* with which the operation was performed. The method of treatment by amputation of the uterus seemed to be an improvement on the previous method of stitching up the tear through an abdominal incision, although, according to Harris, 53% of recoveries was the result by this latter method. By amputation not only was the risk of secondary hæmorrhage avoided, but future pregnancies were prevented, and thereafter a recurrence of this dreadful complication obviated. He would also be inclined in these cases, where the surroundings rendered it impossible to operate at once, and when the primary danger of hæmorrhage was over, to wash out the peritoneal cavity by laparotomy, and thus combat the secondary peritonitis which was almost sure to occur. Such might have been done with advantage in case 3.

Dr Underhill replied.

V. *Dr Ferguson* read his paper on a LARGE EXTRA-PERITONEAL POLYCYSTIC OVARIAN TUMOUR, COMPLETELY REMOVED BY ABDOMINAL SECTION WITHOUT OPENING INTO THE PERITONEAL CAVITY, which will appear in a future number of this Journal.

Dr F. W. N. Haultain had listened with much interest to Dr Ferguson's paper, and congratulated him on the successful termination of the case. It was unfortunate that no epithelial lining could be found in the cysts, as that would have been the means of proving conclusively the character of the tumour. Its ovarian origin was certainly supported by its multilocular character and its contents; but the structure of its walls, the absence of epithelial lining, and its situation, were certainly not corroborative. The rarity of intra-ligamentary growth in multiple cystomata of the ovary was difficult to account for, and would seem to support the theory of their origin from mature but unruptured Graafian follicles, as we know that these tend to grow towards the free and intra-peritoneal surface of the organ. The extreme rarity of intra-ligamentary tumours growing forwards underneath the anterior abdominal wall was also interesting, as it seemed to him that the peritoneum was as readily lifted up anteriorly as posteriorly, but parovarian papillomata nearly always tended to grow backwards under Douglas's pouch, while on the other hand, large broad ligament cellulitic deposits frequently were found dissecting their way under the anterior abdominal wall, between it and the parietal peritoneum.

Dr Ferguson begged to thank the Society for the very kind way in which they had received his paper. In reply to Dr Berry Hart, he explained that the diagram of a section of the broad ligament representing the relative position of the ovary, Fallopian tube, and round ligament, was partly diagrammatic, in order to show more clearly the origin of the ovarian tumour which he had just described.

VI. and VII. The papers entitled CASE OF FATAL PERITONITIS FOLLOWING UPON VULVO-VAGINAL CATARRH IN A CHILD, by Dr Martin, and NOTE ON A PORTABLE INFANT WEIGHER, by Dr J. W. Ballantyne, were in the absence of the authors held as read. The latter will appear in a future number of this Journal.

VIII. and IX. REPORTS of Royal Maternity Hospital for Quarters ending 31st July 1890 and 30th April 1891 respectively, were held as read.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

THE LOCAL USE OF OIL OF WINTER-GREEN IN RHEUMATISM.—The *Mercredi Médicale* mentions that Dr Staples of England has for the past four years been using oil of winter-green in the local treatment of rheumatic affections, subacute and chronic. He employs a liniment of equal parts of oil of winter-green and olive oil, afterwards keeping the member covered, and says that the pains disappear at the end of from four to six hours. It is, moreover, efficacious in the chronic form. Of over a hundred patients so treated, two only have received no benefit (*New York Medical Journal*, May 2nd, 1891).—*Therapeutic Gazette*, June 15th, 1891.

A NEW TREATMENT OF PHTHISIS.—At the meeting of the Académie de Médecine held on April 14th, 1891, Dr P. Germain Sée (*La Tribune Médicale*, April 16th, 1891) gave the method of treatment of phthisis which he had found most satisfactory. His method consisted in causing the patient to pass two or three hours each day in a cabinet of compressed air which contained the vapours of creosote mixed with eucalyptus. Simple inhalations of creosote and of eucalyptus have no effect, nor is the compressed air by itself possessed of any advantage, but the combination of these two methods determines an enormous absorption of creosote by the entire pulmonary surface. Creosote administered by the stomach can only be supported by patients for a few weeks at the longest. When, again, it is usually impossible that subcutaneous injections of creosote be continued as long as is desirable; but creosote, of all antiseptic measures, is best supported in the form of vapours by inhalation, and patients may live for many months perfectly well in an atmosphere highly and permanently charged with these vapours. Dr Sée writes that the physiological effects are most favourable, and under its influence he has seen return of appetite and improvement of general symptoms even in the most advanced cases of phthisis. Hæmoptysis, indeed, so far from being a counter-indication, has been rapidly cured, cough diminished, bronchial expectoration reduced, sputa lost their purulence and odour, and dyspnœa ceased; and auscultation shows that the bronchial râles disappeared entirely, although the râles due to the presence of cavities are naturally not affected. The compressed air charged with creosote is thus, according to Dr Sée, a method of arresting the progress of disease, and the author states that he has notes of twelve cases of phthisis which are practically cured.—*Therapeutic Gazette*, June 1891.

TREATMENT OF ORCHITIS BY REFRIGERATION.—In his inaugural thesis Dr De la Valle reports the results of the treatment of orchitis employed in the service of Dr Du Castel (*Journal de Médecine*, April 10th, 1891). This process consists in painting the scrotum with a camel's-hair pencil dipped in the chloride of methyl, the operation to be repeated twice daily. It is stated that immediate and considerable relief ordinarily follows the very first application, even in cases where the inflammation is violent and where the patients hitherto have been confined to the bed. The average duration of the treatment is 7½ days; the average time the patients remained in the hospital 11½ days. This treatment is extremely simple, and does not necessitate the employment of any other medicinal treatment, whether internally or by external application.—*Therapeutic Gazette*, June 15th, 1891.

KOLA-NUT IN OBSTETRICS.—In the *Lyon Médicale* for March 15th, 1891, Dr Charnbard Henon reports the case of a woman who had had three children, and at each delivery suffered from alarming syncope and cardiac palpitation, the action of the heart being so feeble in one case as to occasion the death of the fœtus. On a subsequent delivery Dr Henon administered a number of chocolate tablets of kola-nut, with the claim that symptoms of syncope were entirely prevented.—*Therapeutic Gazette*, June 15th, 1891.

MEDICAL PERISCOPE.

By Francis Troup, M.D.

Berlin. Klin. Wochenschrift, No. 24, 1891.—Drs Heinz and Liebrecht, of the Pharmacological Institute of Breslau, bring under notice a substance which they consider will replace iodoform. They call it "Dermatol." It is a basic gallate of bismuth. It is a finely pulverulent substance, saffron-yellow, not hygroscopic, and does not decompose under the influence of light. Very like iodoform in appearance, it has not its nasty odour, and is indeed absolutely free of smell. It is a powerful drying antiseptic. It is insoluble in any of the usual menstrua, so its antibacterial properties can only be evoked by actual contact and intimate mixture with nourishing media.

In its application to the human body its pre-eminent desiccating properties cause deterioration of the nutrient supplies available for the bacteria, and thus restrain their growth. This desiccating property influences the healing processes, as in wounds and ulcers, in a very favourable manner. It causes no secondary troubles; it is absolutely non-irritant, and, on account of its insolubility and extraordinary permanence in contradistinction to other bismuth combinations, it is perfectly innocuous.

The authors have had experience of it in surgical, gynæcological, and dermatological practice. Above all, it is a distinguished healer of wounds. Unlike many "antiseptics" it causes no irritation, and does not protract the healing process; it rather allays irritation, diminishes the wound secretions, and promotes granulation. Those properties of dermatol were noticed in cases of burns of the higher degrees, of weeping eczemata, ulcerations, etc., etc. Trials have also been made of the powder in ophthalmic and aural cases. Moreover, the authors consider it to be useful internally as a substitute for subnitrate of bismuth in gastric affections and diarrhœas combined with catarrhal and ulcerative processes.

Ibidem, No. 26.—Fürbringer laid before the meeting of the Berlin Medical Society, held on 17th June, the results obtained post-mortem in 156 cases of phthisis. Of those 142 had never been treated by the Koch cure, while 14 had been subjected to the same for varying periods of time—2 outside the hospital and 12 inside its walls: in only one-half of those last ones was the tuberculin treatment continued till death; in the other half treatment had been suspended, for various reasons, on the average six weeks before the fatal end. Nevertheless, Fürbringer reckons also the six of this category as equally valuable in principle with the others, because it could not be proved that tuberculin was guiltless of the late appearing fatal complications.

The statistics are moderately large, but suffer, with respect to the sparing number of death cases after tuberculin treatment, from the fault of onesidedness. But longer waiting would not have removed this fault, but, on the contrary, increased it; for with more restricted selection of cases for the Koch treatment, and by the substitution of much smaller dosage of tuberculin than formerly obtained, the cases of death in his wards are much less numerous.

In view of the question at present exercising the minds of physicians regarding the powers of tuberculin to produce cheesy pneumonia, or to call up tuberculosis in remote regions of the lungs, or a general tuberculosis in other organs, he has in the 156 cases sought for and noted—

1. Unusually extensive cheesy pneumonia;
2. Unusually extensive miliary tuberculosis of the lungs; and,
3. More or less general miliary tuberculosis.

In the first category he only reckons cases in which a third part of the volume of both lungs has been invaded; in the second, those in which the surface of sections of the lung were not conspicuous by absence of tubercle; and in the third, in addition to the lungs, at least the liver and kidneys must have offered numerous exemplars of submiliary nodules. The results are noted in the subjoined table:—

	14 Treated with Tuberculin.	142 Not treated in that way.
Extensive cheesy pneumonia, . .	6 times.	21 times.
Extensive miliary tuberculosis of lungs,	6 „	9 „
General miliary tuberculosis, . .	3 „	14 „

Or otherwise the table stands:—

	With Tuberculin treatment.	Without Tuberculin.
Cheesy pneumonia, . .	33 p. cent.	15 p. cent.
Miliary tuberculosis of lungs,	43 p. „	6 p. „
General tuberculosis, . .	21 p. „	10 p. „

These figures give one to think. The exorbitant difference of the numbers of the second group (7 to 1) compels Fürbringer's frank confession, that he no longer doubts a causal connexion between the relatively frequent extension of tuberculosis within the lungs and the treatment by tuberculin, at least as it was at first administered.

Ibidem. No. 30.—Professor G. A. Sacharjin, of Moscow, details 12 cases of pulmonary tuberculosis treated by the tuberculin injections. The general result is the following:—in 2 considerable, in 3 inconsiderable improvement of the general condition, without substantial alteration of the condition of the affected parts in all the five cases; in the other 7, unmistakable general and local deterioration. Moreover, after cessation of injections and institution of other treatment, 3 of the patients recovered the ground lost, and became as they were before the injections had been used.

The author, after detailing his own clinical observations, and glancing at those of others, notably Professor Naunyn of Strasburg, sums up the most important evidences—clinical, pathologico-anatomical, histological, chemical, and bacteriological—which have been obtained concerning the mode of operation of tuberculin.

1. The bacilli remain living and pathogenic.

2. Resolution of tubercle by resorption, without disturbance of the surrounding tissues, is not demonstrated, and, looking at clinical observations and post-mortems already numerous, is not very likely.

3. Tuberculin destroys tubercle and the tissues surrounding it.

4. In tuberculous affections of free surfaces (skin, nose, mouth, fauces, larynx, etc.), cicatrization of the ulcers left by the destroyed tubercle may take place, and tuberculin promotes this.

5. In tuberculous affections not on free surfaces, for instance in the lung-parenchyma, where the destroyed parts are not so easily removed, and therefore are retained, their presence causes hectic fever. So it comes to pass that one sees patients with old, probably encapsuled tubercular foci, who have little fever, little cough, and no expectoration, or if any, few bacilli in it. On being treated by tuberculin such patients begin to expectorate freely, bacilli being abundant in the sputa, begin to fever and become weak, and not seldom offer signs of extension of the tubercular process.

6. The destruction of the tubercle and of its enveloping tissues can lead to highly dangerous consequences; for example, to the perforation of a bowel wall, or to the development of a pneumothorax.

7. Tuberculin injections do not protect from a further infection with tubercle, and not only confer no immunity, but, on the contrary, can cause a spread of the process into parts hitherto sound by aspiration (in the case of the lungs) of necrotized tissues containing living bacilli, or by entrance of such bacillary masses into the blood.

8. The so-called reaction, general and local, which follows after injection of tuberculin, can of itself lead to disastrous results. Its diagnostic worth is uncertain: tubercular and non-tubercular may each react or not react. The great perfection of diagnosis of tubercle which we now possess, and which we owe to Koch himself, should make one pause before resorting to so risky and uncertain an aid to diagnosis, or only employ it in extremely few exceptional cases.

9. In a moderately few cases during tuberculin injections patients acquire a lively appetite and increase in weight and strength. Upon what can such an improvement depend? Patients in hospitals find themselves placed in considerably better hygienic conditions than outside, their perhaps former irregular, restless, and damaging mode of living becomes regular and restful, the depressed frame of mind becomes joyful and hopeful. While one recognises the influence of such conditions, one must not altogether deny any to the tuberculin; the enhancement of metabolism, polyuria, and other phenomena which have been noticed during tuberculin injection, show that it has a strong action upon the nourishment, and with that the possibility of an influence over the increase of appetite.

10. In such cases of general amendment sometimes the local phenomena, chest pains, and cough are lessened or disappear entirely; bacilli disappear from the sputa, and auscultation can detect no crepitation (but whether for long?)

What conclusions can be drawn about the value of the Koch method of cure? What results did we derive from former plans of treatment—hygienic, climatic, and therapeutic? What experienced physician has not observed, even in advanced cases of lung tuberculosis, considerable improvement lasting for years, and in initial cases perfect reposition of the general health *ad integrum;* and locally perfect disappearance of all symptoms, subjective and objective, with the exception, perhaps, of a slight difference of the breath sounds of the healthy and affected lung apices? The man of experience has seen this improvement, and in fact healing up, continue for years; and, in consequence, it might be of a deterioration of the general health caused by irregular life, bad hygienic surroundings, or severe illness, the symptoms of lung tuberculosis return anew; and it is questionable in such cases whether the old focus has been stirred up anew, or that a new infection has taken place. The treatment of such relapses by our older methods, whether they give good results or not, is unattended by any of the dangers in which tuberculin treatment is so rich.

Should tuberculin and older methods of treatment be combined? Why should we link together a treatment safe and secure with this new method which has, so to say, somewhat of the lottery in its character, is uncertain, is hazardous, and all the while possesses no advantages, and has not yet brought proof that it can render the services that the former methods of treatment fulfilled?

Therefore the question, whether the treatment of tuberculosis, and especially the treatment of tuberculous lungs by tuberculin, is now ripe for practice, must be answered in the negative. The future will show whether the reply will ever be affirmative.

Ibidem.—Dr Martin Hahn, of the laboratory of Bern, has examined the chemical nature of the efficacious component of Koch's tuberculin. He finds that it is a toxalbumose, and with greater quantities of stuff than stood at his command to work with, he thinks it would not be difficult to prepare it pure and determine its elementary composition, as well as its relationship to one or other of the categories of albumoses as laid down by Kühne and Chittenden. The results obtained are summed up as follows:—

1. The efficacious stuff of tuberculin is precipitated by alcohol.

2. By neutralization and saturation with ammonium sulphate of a watery solution of this alcohol-precipitate, the toxic substance falls out.

3. The body so precipitated is an albumose.

4. It is probably an unmixed (*einheitlich*) body, or possibly blended with small quantities of indifferent albumoses.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

The Modern Treatment of Syphilis.—Mr Hutchinson has written an interesting article on this subject, in which he makes an allusion to Edinburgh worth attention. In estimating the final value of any plan of treatment, or omission of treatment, it is our duty to ascertain, if we can, in what degree the prospect of tertiary phenomena will be influenced by our measures. There can be no doubt whatever that during the last quarter of a century mercury has been steadily gaining the confidence of the profession and the public as the one real remedy for syphilis. *Excepting in Edinburgh* (the italics are ours), *he believes that there are at present in the profession scarcely any anti-mercurialists left. And he remarks in passing, that during the last five years some of the most severe cases of syphilis which he has seen have come from Edinburgh, and had been treated in the earlier stages by systematic abstinence from mercury.* Increased confidence has arisen from modifications of methods of administration. Together with this, we have learnt to use it boldly in the very earliest steps of the disease. We aim, by the "abortive method," at entirely preventing the occurrence of secondary manifestations. If a patient comes under observation within six weeks of the date of contagion, and will take continuously, under competent supervision, such doses of mercury as he can bear—just short of ptyalism—there is little difficulty, in nine cases out of ten, in effecting a complete suppression of the secondary stage. The doses must be sufficient to cause the rapid and complete disappearance of the primary phenomena, since if these are allowed to linger the secondary ones will inevitably follow. He regards mercury as an antidote, inasmuch as it exercises a restraining influence on the multiplication and development of the particular virus upon which syphilis depends. As to the form of mercurial, he habitually uses a pill containing one grain of grey powder with enough opium to prevent diarrhœa or griping. This is taken at intervals varying from three times a day to every three or even two hours, according to its effect on the individual. The patient is at the same time instructed to abstain from fruit, green vegetables, and everything likely to induce looseness of the bowels. In certain cases inunction or the vapour bath must be had recourse to. In a very few mercury, even in small doses, produces debility, emaciation, and neuralgic pains. In such, a combination of quinine and iron with the specific is necessary. Under no circumstances do the secondary phenomena disappear so satisfactorily, and with such small doses, as when the patient is compelled, by some accidental complication, to keep his room, or, still better, his bed. (This is to some extent corroborated by the observations of Kalaschinkow, who concludes that heat has a beneficial effect in the treatment of syphilis, *Monatshefte für prakt. Dermatologie*, 1891, Bd. xii. p. 282). Confinement to the house is seldom necessary. He admits that it is difficult to determine whether or not the whole course of syphilis is influenced for good by the artificial suppression of its early stages; yet he has a strong impression that patients well treated by mercury during the secondary stage have a better chance than others of escaping tertiary phenomena. Tertiary disease is still fairly common, but severe and intractable cases are rare. Iodide of potassium is specially efficacious in the treatment of some forms of tertiary syphilis, particularly in cases of diseased bones, in lupoid affections of the skin, in gummata of the cellular tissue and muscles, and in affections of the nervous system. Yet it is to many persons distinctly a depressant. There is no remedy in respect to which idiosyncrasy takes so large a share. While he considers the iodide of potassium the most active, he often combines with it that of sodium and ammonium, with some free ammonia. As regards permanency of cures by iodide, he thinks that tertiary phenomena, if *cured*, seldom relapse; if only *partially cured*, they invariably do so, as their cell elements are infective. The long-continued use of mercury in small doses for the abortive cure of syphilis has brought to light some very curious facts in reference to the influence of the drug on the general health. In case after case patients have assured him that they had never in their lives felt so well as at the conclusion of a prolonged treatment. Those who benefit in this way are chiefly those who had been liable previously to suffer from sluggish liver and recurring headaches. In the female sex, he has seen some remarkable instances of its power in removing chronic visceral disease. It relieves chronic dysmenorrhœa and the liability to backache and pelvic discomfort which attend disorders of the uterine organs. In such cases mercury probably acts by its power in procuring the removal of the products of chronic inflammation. There are certain conditions associated with syphilis which, though benefited by the administration of mercury and iodide respectively, yet are not cured, or only with great difficulty. Among such are locomotor ataxy and some affections of the palms and soles. In infants inunction is usually very effectual. A solution of the perchloride of mercury in small doses is also efficient, and not so apt to purge as grey powder. In keratitis and deafness in inherited disease, while mercury and the iodides should be prescribed promptly and liberally, the same rapid cures are not to be anticipated. In deafness, unless used very early, they seldom count much. They are tissue maladies, not the result of existing blood poisoning. Hence, probably in part, the impotence of mercury to manifest its specific power. There is no microbe left for it to kill.—*Practitioner*, June 1891.

LESIONS OF THE SKIN IN GONORRHŒA.—Leon Perrin has taken up this question, and after discussing the influence of the gonococcus concludes as follows:—An impartial study of all the contradictory facts shows, that if at present we admit the etiological position of the gonococcus in gonorrhœa—if one can even assert that it is possible to discriminate it from other similar diplococci—one cannot, from its absence from the blood, regard the remote phenomena, and in particular the eruptions seen in gonorrhœa, as due to the presence of this infectious agent in the circulation. One may hold, however, that gonorrhœa is, in the large majority of cases, a parasitic disease, which can occasion local phenomena (orchitis, cystitis, prostatitis), and remote ones (rheumatism, eruptions). The cutaneous phenomena are to be ranked among the exceptional localizations. The eruptions are polymorphic, scarlatiniform, morbilliform: they have no specific character nor such objective or exclusive features as to distinguish them from erythemata arising under the influence of other external or internal causes. Their pathogenesis is complex. Some are simple coincidences due to common causes, which should be carefully searched for. Others arise directly either from the gonorrhœa or the balsamic remedies. They may be thus angioneurotic erythemata, whose production has been determined by the effect of the gonorrhœa on the vasomotor system. Balsamic remedies, particularly copaiba, give rise usually to gastro-intestinal disturbances, but they may induce toxic cutaneous erythemata. They are not, however, directly pathogenic. It seems that it is necessary, in order that they may appear, that the soil should have been already prepared by the gonorrhœa.—*Annales de Dermatologie et de Syphiligraphie,* Oct. and Nov. 1890.

LICHEN CIRCUMSCRIPTUS.—The tendency in recent times has been to restrict the term lichen to lichen planus, and to discard the varieties formerly included under that name. MM. Brocq and Jacquet have examined into the question apart, and, as the result of their investigations, have shown that the disease originally described as lichen circumscriptus cannot be regarded as a mere form of eczema, and is really a variety of the class lichen, though quite distinct from lichen planus. The features of the disease are gone into with the care and fulness which characterize all M. Brocq's work. Numerous instances are cited, and the conclusions may be thus summarized: Lichen circumscriptus is composed, in typical cases, by the formation of patches, most frequently oval, in which one can discriminate three zones:—1. An external pigmentary zone, or a zone of commencing papillary hypertrophy. This is sometimes absent, and presents a coloration which varies from a clear *café-au-lait* to a light brown, by a fine closely-set cross-hatching, made up of two series of parallel grooves intersecting at a right or acute angle, and by a papillary hypertrophy which imparts a velvety appearance. 2. A middle papular zone, which may be awanting in some instances, or may be the external zone when the previous one is not present. It is constituted by a series of small papular elements, irregular in form and contour, imperfectly circumscribed, of a pale or greyish rose, acuminate, rounded, or flat, and of a size varying between that of a small and large pin's-head, apparently due to an advanced degree of papillary hypertrophy. 3. An internal zone, or zone of infiltration, the essential or constituent part of the patch of lichen, and which may exist alone, particularly when the disease is stationary. It is characterized by a coloration of a pale rose tint, or one more or less pigmented, by marked infiltration and thickening of the skin, by a checquering in meshes of various size, and regularly disposed as in a line engraving, lastly by absolute dryness of the surface. The pruritus is the most important phenomenon of the disease. It pre-exists, and is the point of departure of the cutaneous lesions, as a consequence of the traumatism which it occasions,—in fact, when the affected parts are covered hermetically they fade, yet the itching does not disappear. To comprehend the true nature of this complaint, it is necessary to rise above the cutaneous lesion, and to consider the disease as a whole. In so doing one must rely—1, on the neurotic condition of those affected by it; 2, on the pruritus of a fixed type constantly present, at least during the periods of onset and development; 3, on the circumscription of the eruption in patches; 4, on its disposition in concentric zones in typical cases; 5, on its absolute dryness; 6, on the papillary hypertrophy, the papular elevations, the cutaneous infiltration, and the pigmentation which characterize it; 7, on its slow progress and tendency to recur. All these point to a distinct skin disease, and deserving to have a separate position in classification. In reality, it is a species of circumscribed dermato-neurosis, but is best named lichen circumscriptus or lichen simplex chronicus.—*Annales de Dermatologie et de Syphiligraphie,* February–March 1891.

LICHEN CIRCUMSCRIPTUS OF THE PALMS.—Following up his previous communication, Brocq has related two cases in which in association with lichen circumscriptus elsewhere the palms of the hands were attacked. The condition in some respects resembled a chronic eczema of these parts, but there were distinct points of difference. One was that intense itching for a considerable time preceded the eruption. The itching was so intense as to necessitate constant scratching and rubbing for its relief. The description of the patch on one hand is as follows:—It presented a pale though dull red; was circumscribed, though the edges were not sharply defined. It occupied the hollow of the palm between the thenar and hypothenar eminences. It was grooved by deep and painful fissures. The epidermis was dry, horny, but not much thickened. It looked quite dry, but though the patient said it had been so for a long time it occasionally discharged slightly. One case bore some likeness to pruritus senilis, but differed from it in its more rebellious character, and by the readiness with which lichen developed on the body.—*Annales de Dermatologie et de Syphiligraphie,* May 1891.

TROPHO-NEUROTIC LEPROSY WITH SENSORY DISTURBANCES RESEMBLING THOSE IN SYRINGOMYELIA.—Thibierge exhibited a patient to the Medical Society of Paris, in whom the diagnosis of leprosy had been made two years before by Leloir. He exhibited sensory disturbances analogous to those of syringomyelia (analgesia, thermo-anæsthesia, almost absolute preservation of the tactile sensibility of the feet, limbs, hands, and forearms), but who had trophic affections of the lower limbs, and whose residence in Tonkin, with paralysis of the orbicularis palpebarum and nodular swelling of the ulnar nerve, were sufficient to establish the existence of leprosy. The characters of the sensory disturbances were very important, and prove that such cannot be made use of to establish the diagnosis between leprosy and syringomyelia in puzzling cases.—*Annales de Dermatologie et de Syphiligraphie,* May 1891.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women and Children, School of Medicine, Edinburgh.

PROGNOSIS AND TREATMENT OF PUERPERAL ECLAMPSIA (Löhlein, H., *Centralbl. f. Gynäkologie,* No. 23, 1851).—The author considers the frequency, the dangers, the sequelæ, and the treatment of puerperal eclampsia, and he draws deductions upon these points from the clinical records of the large German hospitals. During a period of two and a half years there occurred 52,328 births, with 325 cases of eclampsia (about ·6 %). The proportion of eclampsia was found to differ in different hospitals; for the average varied from 1 in 318 labours in the Vienna Hospitals to 1 in 67 in other hospitals. With regard to all kinds of practice, he thinks that Scanzoni and Schröder are above the mark when they give 1 in 500 as the proportion of eclampsia cases. Of the 325 cases 63 succumbed to the eclampsia, and 14 to complications. The mortality was 19·38 per cent., and it was noted that the smallest proportion of deaths took place in primiparæ in whom the convulsions first appeared post-partum, whilst the highest mortality was found in multiparæ in whom the eclampsia occurred ante-partum. Amongst the cases that survived sequelæ, such as pneumonia, pleurisy, chronic nephritis, and speech disturbances were noted. Operative interference was necessary in 71·1 per cent. of the cases (forceps, 108 times; version, 19 times; craniotomy, 13 times; artificial abortion, twice; and Cæsarean section, 7 times). Of the sections five were performed on the mothers after death, one upon a moribund patient, and one on a living woman, in which case both mother and child were saved. The medicinal treatment specially recommended is the use of large doses of morphia. The indications for Cæsarean section on a patient suffering from eclampsia are difficult to formulate. The child must be alive, and yet its life must be seen to be threatened by the violence of the convulsions; medicinal methods must have proved ineffectual; and, finally, the cervix must be too small to admit of delivery *per vias naturales.*

A CASE OF AN EARLY BLIGHTED OVARIAN PREGNANCY (Eberhart, *Centr. f. Gynäkologie,* No. 24, 1891).—The author records a case of early extra-uterine pregnancy, diagnosed as tubo-ovarian in nature, and treated by abdominal section. The section was performed three months after the last menstruation, and the left tube and ovary were removed. The latter contained a cystic tumour of the size of a hen's egg, on the outside of which were numerous villi with fine wavy vessels. Decidual cells were not found. The author puts the assumption of a simple ovarian abscess on one side, and considers the case as one of an ectopic ovarian pregnancy which had been blighted. As there was also atresia of both ends of the Fallopian tube of the same side, Eberhart considers that there must have been an extra-uterine migration of the semen.

ON TUBAL- AND OVARIAN-RESECTION (A. Martin, *Centr. f. Gynäkologie,* No. 25, 1891).—Martin gives a series of twenty-one cases of ovarian-resection, and another of twenty-four cases of tubal-resection. These operations differ from ordinary salpingotomies and oophorectomies in the fact, that in the case of one of the tubes or ovaries it is only possible on account of adhesions, etc., to remove the diseased part of the organ, leaving the remaining portion *in situ.* Sometimes it is only possible to puncture or incise without removing any tissue at all. The analysis of the cases shows that the results obtained are good, and that there is no tendency for fresh disease to develop in the portions of the organs left behind. In all the patients thus operated on menstruation was retained, and the possibility, at least, of conception. This is a matter of some importance, since most of the diseases for which the operation is undertaken occur in early adult life.

THE NARROW PELVIS AS A SIGN OF DEGENERATION (Wiedow, *Centr. f. Gyn.,* No. 25, 1891).—From observations upon thirty-five patients with deformed pelves, the author is of the opinion that the pelvic deformity is to be taken as a sign of an anomalous condition of the whole organism. He gives examples of cretinism; anomalies of the spine, head, and limb-bones; irregularities in the appearance of the teeth; malformations of the genital organs and mammæ, etc.

MOLAR PREGNANCY AND ALBUMINURIA (Schuhl, *Archives de Tocologie et de Gynécologie,* No. 6, 1891).—Dr Schuhl in this paper endeavours to settle the question whether or not the albuminuria of pregnancy is sometimes a cause of the myxomatous degeneration of the chorionic villi. Many authors are cited who suppose that there is a relationship between maternal albuminuria and the production of a hydatid mole, and cases in which the two conditions have been found existing simultaneously have been brought forward in support of such a relationship. Dr Schuhl has collected twenty-three observations (including one case noted by himself) in which molar pregnancy was complicated by albuminuria. It was, however, impossible from these cases to form any idea of the frequency with which the two conditions are associated, so that the author has gathered together all the cases of hydatid mole that have been reported in medical literature since the year 1870, and has found that of the 132 cases thus collected, in only 14 was there coexistent albuminuria. Making some allowance for the cases in which the clinical history was incomplete, he arrives at the result that in about 10·6 per cent. of the cases of hydatid mole there was also albumen in the urine. He concludes that albuminuria is not more frequently observed in molar pregnancy that in gestations uncomplicated by the myxomatous degeneration of the chorionic villi. One interesting deduction, however, is drawn from these collected cases, and it is this: albuminuria, when it occurs in connexion with a molar pregnancy, is generally found in the early months, whilst in gestations unaccompanied by hydatid degeneration of the chorion, the appearance of albumen in the urine is not commonly observed till the last three months. The author, therefore, concludes that early albuminuria is observed much more frequently in a molar pregnancy than in one uncomplicated by this degeneration of the chorion, and he feels warranted in supposing that there exists a causal relationship between albuminuria and the hydatid mole.

BROW PRESENTATION; SPONTANEOUS DELIVERY; LIVING CHILD; NORMAL PUERPERIUM (Hubert, *Arch. de Tocol. et de Gyn.*, No. 6, 1891).—The case recorded was one in which there was persistent presentation of the brow. The condition is very rarely met with, and generally in connexion with a large well-formed pelvis and relaxed soft parts. Such were the conditions found in this case. The labour lasted nine hours, and no instrumental interference was necessary. The head rotated round the upper jaw, which became fixed under the pubic arch, the occiput distended, and passed over the perineum without causing any rupture, and the face appeared under the symphysis pubis. The infant lived, and the mother had a normal puerperium. No cause for the frontal presentation was to be found in either the shape of the pelvis or the direction of the uterus. The cord was round the neck, and the author asks whether this might not have been the cause of the presentation. A brief note upon the mechanism and treatment of brow cases is appended.

INHALATIONS OF OXYGEN IN NEW-BORN INFANTS (Bonnaire, *Bulletins et Mémoires de la Société Obstétricale de Paris,* Mai 1891). —Bonnaire gives in this paper the results of his experience with inhalations of oxygen in various maladies of the new-born infant. He has found it of great value in asphyxia neonatorum, in athrepsia, and in an epidemic of the rare and fatal disease known as Winckel's malady or bronzed hæmaturia of the new-born (Bar). He also finds an indication for its use in sclerema neonatorum.

PERISCOPE OF SYPHILOLOGY AND GENITO-URINARY DISEASES.

By FRANCIS CADELL, F.R.C.S. Ed.

TESTICLE FLUID AND ITS EFFECT IN THE TREATMENT OF DIFFERENT DISEASES, by Dr Brown-Séquard.—A translation of this paper appears in *The American Practitioner and News*, April 25, 1891, by Dr Bloom, of which the following is an abstract:—Dr Brown-Séquard had made a resolution never personally to apply his experiments to patients. To avoid the solicitations of would-be patients, he had to flee to an obscure place in England, where he was able to live in peace. During this period, which lasted three months, he made no further injections on himself, and was thus able to analyze the further progress of the benefits which he had derived from his first experiments. During the first six weeks no failure in the rejuvenating effects took place, but at the end of that time the benefits grew less. Capacity for work was the first to diminish, then the muscular force, the strength of the stream of urine, and the intestinal functions became, little by little, as they had been before the injections. On account of a cough he spent the winter in Nice. Here, having a difficulty in rendering the injecting fluid aseptic, he decided to use it per rectum. The effect was as satisfactory and as durable as with the hypodermic injections. The only accident, which happened sometimes, was a slight local irritation when the injection was too concentrated. Each time he injected the liquid from the trituration of two goat testicles diluted in 50 cubic centimetres of water. The testicles of other animals may be used with advantage. He states that benefit has resulted in the following diseases,—Paludal cachexia, locomotor ataxia, anæmia, dyspepsia, and certain cases of incontinence of urine. Apropos of incontinence of urine, he cited a case observed by M. D'Arsonvale. A French savant had been obliged to suspend his work on account of incontinence of urine and violent rigors. The result of injections was excellent, and the gentleman resumed his work. A physician whose wife was exhausted from metrorrhagia, proceeded as follows:—Trusting in the value of injections of testicle fluid, he had connexion with his wife, and collected the semen in a condom. Then he injected under the skin of the patient a cubic centimetre of the fluid. Improvement was most rapid. He would not recommend this method for fear of septic results. He asks for more information from those who have tried this remedy, especially in the cases of old debilitated people attacked by some malady.

CONTAGIOUSNESS OF GONORRHŒA.—In discussing the contagiousness of chronic urethral discharges in the *Journal of Cutaneous and Genito-Urinary Diseases*, March 1891, Dr George Emerson Brewer, of New York, says the practising physician is frequently called upon to answer inquiries regarding the limit of the contagious stage of gonorrhœal urethritis. Among the cases coming under his notice, the only evidence of disease remaining was frequently the presence in the urine of small thread-like bodies, to which the name of *Tripperfaden* had been given by the German surgeons, who first described them and demonstrated their importance. These minute shreds are composed of mucus, pus, and epithelium, and represent the secretions which adhere to any granular patch or area of chronic inflammation remaining on the urethral mucous membrane. In his recently published work, Dr Ernest Finger prohibits marriage in all cases where the existence of a chronic urethritis is evidenced by the presence of the "morning drop," or *Tripperfaden* in the urine, until the following facts have been established:—1. That after from two to four weeks of daily observation, the secretions from the urethra are found to be *free from pus and made up wholly of epithelial cells.* 2. That no gonococci can be detected by the microscope, even after a purulent discharge has been established by the employment of irritating injections of corrosive sublimate or nitrate of silver; and, 3. That neither prostatitis nor stricture exists. Dr Brewer says that upon first becoming acquainted with the views expressed by Finger, he regarded his conditions as unnecessarily severe, and his opinion of the danger as greatly exaggerated. But a somewhat remarkable case, which came under his observation, illustrated in a most striking manner the fact, that unless some of the precautions advised by Finger had been insisted upon, the responsibility of a dangerous illness would justly have rested upon his head. The case is reported by Dr Brewer, and fully justifies the inferences he draws from it.—*Medical and Surgical Reporter*, April 18, 1891.

MALIGNANT DISEASE OF SCROTUM AND PENIS.—Mukhan, a Brahmin, aged 17 years, came to the Muttra Dispensary on July 10th, 1890. His face was anæmic, and expressed great suffering and anxiety. The body generally was much emaciated, but he presented no symptoms of acute or organic disease of the lungs. From the centre portion of the left side of the scrotum protruded a fungoid mass about the size of a small hen's egg. The environing tissues were all involved, boggy, and infiltrated. In the right testicle the disease had not extended quite so far; all the tissues surrounding, however, were involved, as well as the penis itself, the foreskin being much elongated, and having the appearance of a fungus. The lad had the greatest difficulty in passing urine, and begged of me—so frightful had been his sufferings—to do something to relieve him. I therefore determined to remove the whole mass, viz., penis, testes, and scrotum. The testes were first exposed by vertical incisions, extending from the situations of the external rings on either side, and extending to the bottom of the scrotum; they were then removed, as in the operation for castration. Next, the scrotum was removed, as in the operation for scrotal tumours. Finally, the penis itself was amputated at its root. After removing all the parts, it was found that the commencement of the edges of the longitudinal incisions could be approximated; this having been done, all the rest of the wound, that is, the parts immediately surrounding and below the penis, were left to heal up by granulation; a catheter was passed, the wound dusted with iodoform, and the entire mass covered over with lint soaked in a solution of corrosive sublimate. The patient experienced but little shock, and the parts healed most kindly; he was discharged cured on August 15th. Since his discharge I have seen him very often. The last time was in December last; he walked over to see me from his native village, distance eight miles. The parts had entirely healed, he passed his urine freely, and his general appearance was most striking. Instead of the thin, worn out, and worried looking lad of a few months back, he was looking quite fat, chubby, and cheerful. (J. Fayrer, M.D., F.R.C.S.E., Med. Staff).—*British Medical Journal*, May 20, 1891.

TREATMENT OF GONORRHŒAL RHEUMATISM.—In a discussion on the treatment of gonorrhœal rheumatism at a meeting of the Paris Société de Dermatologie et Syphiligraphie on May 14th (*Semaine Médicale*, May 16th, 1891), M. Jullien said that, having regard to the infectious origin of the disease, he had for the last five years systematically treated it with subcutaneous injections of bichloride of mercury with extremely satisfactory results. M. E. Besnier pointed out that joint inflammations of gonorrhœal origin often spontaneously underwent rapid modifications which made it very difficult to judge of the effect of particular remedies. In his experience local treatment was the most important therapeutic factor in such cases, and he placed most reliance on the method recommended by M. Lucas-Championnière, which consisted in touching the parts in a number of places with the point of the cautery, and then wrapping the joint in Vigo's mercurial plaster with cotton-wool dressing afterwards. M. du Castel said he had tried mercurial friction in one case without result, while in another case, in which, however, the inflammation was less severe, it had done a great deal of good.—*Supplement, British Medical Journal, June* 13, 1891.

Part Fifth.

MEDICAL NEWS.

UNIVERSITY OF EDINBURGH.—*The following received the Degrees of Bachelor of Medicine and Master in Surgery:*—Walter Adam, Alexander James Anderson, Alford William Anderson, James Anderson (M.A.), John Anderson, Robert Johnston Ashton (B.A.),† Frederick Richard Breeks Atkinson, James Atkinson, Louis Gabriel Barbeau, Joseph Herbert Bayley, Hugh Bennett, Richard James Arthur Berry, Alfred John Bienemann, Thomas Hill Bishop, Hight Blundell, John Wardle

Bone,* George Edward Bowker, John Joseph Brennan, Thomas Booth Brierley, James Douglas Broadfoot, Samuel Carter Brush, William Murray Cairns, Kenneth Mackenzie Cameron, Percy Capper, Edward John Walter Carruthers, Charles William Chapman, Hugh Aiken Clark, George Ernest Clemons, Charles Cochrane, Robert Pitcairn Cockburn, Christiaan Jacobus van Coller, John William Compton, John Cowan, Robert Cran,† John Hamilton Crawford, John Frank Crombie, Herbert William Crosse, George Denholm Darlington, James Davidson (M.A.), Harold Roberts Lloyd Davies, Robert Greenwood Dempster, William Blackley Drummond,* Alfred Duke (M.A.), Samuel Edgerley (M.A.), George Elder,* Arthur Campbell Elliott, Michael Emin, Friederich Wilhelm Eurich,† James Lumsden Fenton (B.A.), Lawrence George Fink, Ernest Cotton Fischer, James Lyon Fletcher, William Douglas Forsyth, Francis Troughton Foster, Edward Joseph Fox, John Francis, Hugh Ernest Fraser (M.A.), Edward Barnard Fuller,* William Monro Dasent Gallie, Denson Gibb, Henry Joseph Glover, Frederick Gourlay, Francis Charles Henry Grenier, William Griffith, William Clayton Grosvenor (M.A.), Henry Baker Hall,* Stanley Arthur Harriss, Stephen Herbert Hartley, Alfred Joseph Haslam, Piers James Hatton, Edmund Hay, William Peach Hay, Richard Armstrong Heath, George Edgar Helme, Thomas Rowatt Henderson (M.A.), George Hennan,* Sidney Hillier, George John Brown Hope (M.A.), John Vernon Hulme, Robert Beveridge Huxtable, Pulipada Richard Hay Jagannadham (B.A.), Herbert Saunders Wansbrough Jones (B.Sc.),* John Lewis Jones, Arthur Backwell Kenworthy, Edward Kinmont, Robert Lamb (M.A., B.D.), Leslie James Lamrock, Ernest Philip Theodor von Landsberg, Herbert Ernest Lee (B.A.), Cyril Lewis, John Livingstone, Alexander John M'Callum, Thomas Finlayson Macdonald, Henry Moncreiff MacGill, Wakefield MacGill, Thomas Newall Macgowan, James Twiname M'Kay, Thomas George M'Kellar, David John Mackenzie (M.A.),† Frederick John M'Kettrick, Archibald Mackintosh, John Maclaren, Samuel Maclean, William Bernera Macleod, Chas. Macmaster, David Macmillan (M.A.), John Lewis Macrae, Frederic Rowland Mallett, Chas. Martin, Thos. Graham Mathews, John S. Maynard, Geo. Melville, Wm. Mill (B.A.), Jas. Miller, Thos. Hugh Milroy, Wm. Cunningham Milroy (M.A.), Geo. Henderson Mitchell, Ernest Coleman Moore, Lancelot Paxton More, Paxton St Clair More, Frederick William Moss, John Douglas Ross Munro, James Augustus Murison, William Murray, Alexander Jacob van Niekerk (B.A.), Samuel Ingleby Oddie, Walter Holland Ogilvie, John Orr,† Thomas Llewelyn Parry, William Peart-Thomas, Geoffrey Hammett Prance, Richard Llewelyn Price, Harry Rainy (M.A),* James Murray Renton (M.A.), Edward Hope Ridley, Joseph Harry Roberts, Alaric George Robertson, John Fordyce Robertson (M.A.), William Ford Robertson, Faustin Albert Rodriguez, James Corrigall Rossie, Alexander Rutherford, Alfred Rutter, John Barron Scott, Robert William Loveridge Scott, Samuel Allan Shiach, Edward Wheeler Slayter, James Burnet Smith, John Grimmond Smith, John Spurway, Edward Millar Steven, Thomas Stodart, Archibald Stodart-Walker, Charles Stuart, David Stuart,† Charles Arthur Sturrock (M.A.), Charles David Sutherland, John Sutherland, William Smith Syme, Bernard Thomas, William Thyne (M.A.), David Duncan Tindal, Henry Stanley Walker, Thomas Dyson Walker (B.A.), William John Walker (B.A.),† David Henry Walsh, Gerald Stockwell Walton, George Glendinning Watson, Neish Park Watt (M.A.),† Alfred Irby Webster, Jas. Harris Garcia Whiteford, David Wield (M.A.), Rowland Stanley Wilde, John Cadwaladr Williams, John David Williams, John William Williams, George Wilson (M.A.), John Thomas Wilson,† Thomas Alexander Miller Wilson, John Maxwell Wood, David Hastings Young, James Young Simpson Young, Richard John Erskine Young, Frederick Selim Zaytoun.

* Indicates that the Candidate has passed the Examinations with First-Class Honours.

† Indicates that the Candidate has passed the Examinations with Second-Class Honours.

ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.—The following gentlemen passed their final examination for the degree in Medicine at the sittings held on 5th August 1891, and were admitted L.R.C.P. Ed. :—Percival Smith, Sirhowy, Tredegar, Mons.; John Robert Wilson, Eccles and Patricroft Hospital, Manchester.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—The following gentlemen passed the final examination for the degree in Surgery at the sittings in July 1891, and were admitted L.R.C.S. Ed. :—Joseph Fuller, Skibbereen, County Cork, and Albert Edward Dyas, Castlepole, Kells, Meath.

On the 28th of July last the Academy of Medicine of Paris proceeded to elect two foreign Fellows from the list of the Corresponding Members. Their choice fell upon Sir Joseph Fayrer, and Dr Frederic Bateman of Norwich. Sir Joseph Fayrer is well known for his services in India and his treatise upon "Serpents," and Dr Bateman owes this honour to his work on "Aphasia," the second edition of which appeared last year. The number of foreign Fellows of the Academy of Medicine is restricted to twenty, of whom six others belong to Britain, viz.—Sir James Paget, Sir Richard Owen, Sir Joseph Hooker, Sir Thomas Longmore, Dr West, and Sir Spencer Wells.

The American Orthopædic Association has published a most interesting programme of their Fifth Annual Meeting, which is to be held in Washington on September 22nd, 23rd, 24th, and 25th, under the presidency of Dr A. B. Judson of New York. Messrs Brodhurst and Marsh, of London, Mr Jones of Liverpool, and Mr Wright of Manchester, are to represent English Surgery. Scotland has no representative in the published programme.

British Medical Service.—List of Surgeons on Probation of the Medical Staff of the British Army who were successful at both the London and Netley Examinations, 30th July 1891:—

No.	Name.	Combined Marks.
1.	Porter, F. J. W.,	5940
2.	Robinson, O. L.,	5370
3.	Stalkartt, C. E. G.,	5235
4.	Gibbard, T. W.,	5160
5.	Healy, C. J.,	4992
6.	Burtchaell, C. H.,	4975
7.	Buist, H. J. M.,	4970
8.	Stanistreet, G. B.,	4930
9.	Brown, F. J.,	4910
10.	Hardy, W. E.,	4900
11.	Brogden, J. E.,	4777
12.	Tate, G. W.,	4760
13.	Faichnie, N.,	4745
14.	Lenehan, T. J.,	4725
15.	M'Dowell, F.,	4710
16.	Begbie, F. W.,	4665
17.	MacCarthy, J. A. O.,	4656
18.	Austin, J. H. E.,	4610
19.	Duggan, C. W.,	4595
20.	Gerrard, J. J.,	4565
21.	Jameson, J. C.,	4425

Papain (Dr Finkler & Co.).—Mr B. Kühn of London has sent us a sample of the above substance, and it gives us much pleasure to strongly recommend it to our readers. Papain is a vegetable ferment of great power, and, moreover, is sure to become a much-used and most valuable medicine. As a ferment it is active in acid, neutral, and alkaline solutions, a circumstance which renders it more valuable than either pepsine or pancreatin. Internally it will be found useful in many forms of dyspepsia in doses of 1 to 5 grains; externally it will be found useful (in a 5 or 6 per cent. solution) as a solvent for the false membrane of croup or diphtheria, or to many indurated parts, such as chronic eczema, warts, corns, etc. This preparation is one we can confidently recommend.

OBITUARY.

THE LATE DR CHARLES BELL, EDINBURGH.

ANOTHER link of the old and well-worn chain of our senior medical friends has again been rent by the death of the oldest practitioner in Edinburgh, who, after the more or less active pursuit of his profession, died on the 9th inst. in his 87th year.

The memory of the son of a distinguished Edinburgh advocate, and the nephew as well as the namesake of the renowned Sir Charles Bell, and of the equally great John Bell, the eminent surgeon—a hereditary lineage which for honourable distinction has seldom been equalled or ever surpassed—is surely entitled to the respectful regard and tender consideration of the friends who best knew him during life, and can therefore best and most truly estimate his character now that he has gone.

An obituary penned so immediately after his funeral is scarcely the time to indulge in remarks alike applicable to personal merits or individual demerits, and therefore as we may again be afforded, if spared, another and wiser opportunity when the turf over his resting-place has become greener and our thoughts of him deeper and perhaps graver as well as riper, we shall now only dwell on the few passing reflections which at present occur to us in thinking of the life and character of him who has left associations and memories as to what he was and did which will not likely by us be soon forgotten.

Dr Charles Bell first joined the Edinburgh College of Surgeons as a Licentiate in 1830, and afterwards graduated in Glasgow in 1836, becoming a Fellow of the Royal College of Physicians in Edinburgh in the following year, and was during his after and long career in the city, where he was well known as an active member of its various professional and other bodies, a teacher and examiner in the colleges, and the author of several important contributions to Midwifery, to which department he principally directed his attention in practice. His communications and observations given in our periodical literature and otherwise were by no means infrequent, and generally denoted the well thought over and well expressed results of a ready pen, he himself being a great reader as well as a polite writer, and by no means an unpracticed or ineffective speaker. Of the special work to which he was known to have devoted much attention may be noticed a subject in which he carried out the views as well as the practice of his elder brother Dr George Hamilton Bell, with whom he became intimately associated. We here allude to the Curative Treatment of Erysipelas by means of the Perchloride of Iron, or rather by his specially favoured preparation, the old "Tincture of the Muriate," which he so strongly insisted on always prescribing, and as persistently refusing to admit or accept of the newer pharmaceutical "Liquor" as an equivalent at all equal to the old, and as he thought purer tincture, which he often boasted would, if speedily and largely enough given, seldom or never fail in staying not only erysipelas, but most other cases of septicæmia, especially that of puerperal fever, including also Diphtheria, of the cure and prevention of which he thought and often argued that he possessed a more than ordinary mastery. In the medicinal properties of "Condy's Fluid" he had great confidence, having been among the first to observe and recommend it as a useful preventive and corrective of contagious influence; and in its various uses he was well known to take a deep interest, which was frequently and gratefully acknowledged by Mr Condy himself. In the almost infinitesimal doses of calomel and "James's Powder" as a wonderful febrifuge agent in the treatment of children's diseases he also had the utmost belief. For these and other useful suggestions, apart from everything else, he surely deserves our special remembrance.

Although Dr Bell's general and professional energies were exercised with the most praiseworthy perseverance, the measure of his success, as in many other cases, fell very far short of his deserts. His great suavity of manner, and massive and truly physician-like appearance, together with his hereditary advantages, naturally seemed to favour his prospects of attaining special success; but Fortune's wheel does not always move forward to its deserved and looked-for place. Untoward circumstances are, moreover, apt at times to disturb sensitive natures like his, and those who may be differently constituted as well as differently situated often make little or no allowance for occasional manifestations of temper which even the best and choicest of men cannot at all times resist. While, however, a certain peculiarity of temperament occasionally led our late colleague to take offence unnecessarily, he had a heart too full of sympathy and kindness ever to harbour animosity against any person. Assuredly Charles Bell was not the man to refuse either to forgive an injury or to forget a kindness; for he well knew what is ever due to the character and bearing of a gentleman. At all events the Royal College of Physicians and his brethren who knew him best, some of them intimately for many long years, could not but experience the utmost feelings of affection and respect for the character of one whose life duties as well as life sorrows are now all over, and whose memory will be long and favourably cherished.

A. K.

PERIODICALS RECEIVED.

Albany Medical Annals,—Jan.-May.
Alienist and Neurologist,—April-July.
American Journal of Obstetrics,—March-Aug.
American Journal of the Medical Sciences, March-Aug.
American Lancet,—Feb.-Aug.
American Practitioner and News,—Jan. 31-Aug. 1.
Annales d'Oculistique,—Jan.-July.
Annales de Dermatologie, etc.,—Feb. 25-July.
Annales des Maladies des Organes Génito-urinaires,—March-Aug.
Annales des Maladies de l'Oreille, etc.,—March-Aug.
Annales et Bulletin de la Société de Médecine d'Anvers,—Jan.-June.
Annali di Ostetricia e Ginecologia.—Aug.
Archives de Tocologie,—Feb.-July.
Archives Générales de Médecine,—March-Aug.
Archives of Gynæcology,—Feb.-July.
Archives of Pediatrics,—March-Aug.
Archives of Surgery,—April-July.
Asclepiad,—March-June.
Australasian Medical Gazette,—Jan.-June.
Berliner Klin. Wochenschrift,—Feb. 23-Aug. 17.
Birmingham Medical Review,—March-Aug.
Births, Deaths, and Marriages, Monthly Return of,—Jan.-July.
Do., Quarterly Return of.—Dec.-June.
Blatter für Klinische Hydrotherapie,—May-Aug.
Boston Medical and Surgical Journal,—Feb. 12-Aug. 6.
Bristol Medico-Chirurgical Journal,—March-June.
British Gynæcological Journal,—Feb.-May.
British Journal of Dermatology,—March-Aug.
Brooklyn Medical Journal,—Feb.-Aug.
Bulletins et Mémoires de la Société Obstétricale et Gynécologique de Paris,—Feb.-May.
Centralblatt für Nervenheilkunde und Psychiatrie,—June–Aug.
Centralblatt für Gynäkologie,—Feb. 28-Aug. 22.
Centralblatt für Chirurgie,—Feb.28-Aug. 22.
Centralblatt für Bacteriologie und Parasitenkunde,—Band ix., Nos. 6-27. Band x., Nos. 1-5.
Chemist and Druggist,—Feb. 28-Aug. 22.
Dietetic Gazette,—Feb.-Aug.
Dublin Journal of Medical Science,—March-Aug.
France Médicale,—Feb. 27-Aug. 21.
Gazette Médicale de Paris,—Feb. 28-Aug. 21.
Gazetta Medica di Torino,—Feb. 15-Aug. 5.
Glasgow Medical Journal,—March-Aug.
Hospital Gazette,—July 25.
Hygiene,—Aug.
Index Medicus,—Jan.-July.
Indian Medical Gazette,—Feb.-July.
Jahrbuch für Kinderheilkunde—April.-July.
Journal de Médecine de Paris,—March-Aug. 23.
Journal of Anatomy and Physiology,—April-July.
Journal of Cutaneous and Genito-Urinary Diseases,—March-Aug.
Journal of Mental Science,—April-July.
Journal of Nervous and Mental Disease,—Feb.-Aug.
Journal of the American Medical Association,—Feb. 14-Aug. 8.
Journal of the British Dental Association,—March-Aug.
Klinische Monatsbläter für Augenheilkunde,—Feb.-Aug.
L'Électrothérapie,—March.
Liverpool Medico-Chirurgical Journal,—July.
London Medical Record,—March.
London Medical Recorder,—Feb.
Medical Bulletin,—Feb.
Medical Chronicle,—March-Aug.
Medical Press and Circular,—Feb. 25-Aug. 19.
Monist,—April.
Monthly Medical Review,—Feb.
Montreal Medical Journal,—March-July.
Morningside Mirror,—Jan.-June.
New York Medical Journal,—Feb. 14-Aug. 8.
Pharmaceutical Journal of Australasia,—April-June.
Philadelphia Medical and Surgical Reporter,—Feb. 14-Aug. 8.
Philadelphia Medical News,—Feb. 14-Aug. 8.
Philadelphia Satellite,—Feb.-June.
Popular Medical Monthly,—April.
Practitioner,—March-Aug.
Proceedings of the Society for the Study of Inebriety,—May-Aug.
Progrès Médical,—Feb. 21-Aug. 15.
Progresso Medico,—April-Aug.
Quarterly Therapeutic Review,—April.
Revue de Chirurgie,—March-July.
Revue de Thérapeutique Médico-Chirurgicale,—March 1-Aug. 15.
Revue Générale de Clinique et de Thérapeutique,—Feb. 25-Aug. 19.
Revue Mensuelle de l'École d'Anthropologie de Paris,—April.
Sei-i-Kwai Medical Journal,—Feb.-June.
Southern Clinic,—April.
Therapeutic Gazette,—Feb.-July.
Transactions of the Sei i Kwai,—Jan.
Virchow's Archiv,—Feb.-July.
Weekblad van het Nederlandsch Tijdschrift Geneeskunde,—Feb. 28-Aug. 22.

A PHYSIOLOGICAL ALPHABET.

I.—VOWELS.

y* — i e a o u — *w

These should be pronounced in the Latin manner, as *ēē*, *eh*, *ah*, *oh*, *oo*. *y* and *w* are consonants, not vowels, but, as explained in the text, they have very close relationships to the vowels, initial *y* being very closely related to *i*, and initial *w* to *u*.

II.—CONSONANTS.

	Voiceless Oral Consonants.	Voiced Oral Consonants.	Voiced Nasal Resonants
Labials.	***P***	***B***	M
(1st Stop Position.)	(W)	W	
Labio-Dentals.	F	V	
Linguo-Dentals.	Th^{1} S	Th^{2} Z	
Anterior	Sh	Zh	
Linguo-Palatals.	***T***	***D***	N
	(L)	L	
(2nd Stop Position.)		R	
Posterior	***K***	***G***	Ng
Linguo-Palatals.	H or Ch	Y	
(3rd Stop Position.)		(R)	

The voiceless *W* and the voiceless *L* have been given above within brackets, the former being now almost confined to Scotland, and the latter being peculiar to Wales. The burring or uvular *R* is also given within brackets.

ILLUSTRATIVE SENTENCES.

I.—VOWELS.

Even ancient elves are awed over oozing.

This sentence represents only long vowels. Their short equivalents can be represented, as shown by Mr Pitman, by attaching the letter *t* to each vowel, thus:—

ĕĕt, it, et, at, ut, ot, ŏŏt.

II. CONSONANTS.

Peter Brown made w*h*ite wax.

Fine villages.

Thinkest thou so, zealot?

She leisurely took down nine large roses.

Can Gilbert bri*ng* Lo*ch* Hourn youths?

ILLUSTRATIVE SENTENCES.

I.—VOWELS.

Even ancient elves are awed over oozing.

This sentence represents only long vowels. Their short equivalents can be represented, as shown by Mr Pitman, by attaching the letter *t* to each vowel, thus:—

ĕĕt, it, et, at, ut, ot, ŏŏt.

II.—CONSONANTS.

Peter Brown made w*h*ite wax.

Fine villages.

Thinkest thou so, zealot?

She lei*s*urely took down nine large roses.

Can Gilbert bri*ng* Lo*ch* Hourn youths?

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By John Wyllie, M.D., Lecturer on Medicine in the Edinburgh School; one of the Ordinary Physicians to the Royal Infirmary, Edinburgh.

Part I.—The Functional Disorders of the Vocal Mechanism.

1. *On Stammering; and on the Study of the Alphabet.*

The performance of a good player on the violin affords a beautiful illustration of co-ordinate movement. His two hands co-operate with each other, gracefully and easily, in the execution of their delicate task. Each hand has its own work to perform. The right, wielding the bow, is the producer of sound: in proper time, and with correct emphasis of touch, it calls forth the vibrations of the strings in rapid succession. The left hand moulds the sound into music by its manipulation of the strings. Its fingers must not only keep pace, upon the strings, with the movements of the bow, they must touch each string, to a nicety, in the right place, otherwise the note will be out of tune. Let it be particularly noticed, as of special interest in connexion with our present subject, that the two hands must act in perfect co-ordination one with the other: that is to say, that each hand, in assisting the other, must perform its part of the work exactly at the right moment, neither too soon nor too late, since the slightest inexactitude in this respect would be utterly destructive of the music. From the consideration of these independent and combined movements of the two hands of the violinist, one can form some conception of the wonderful facility and exactitude of execution that can be acquired by the motor centres of the nervous system through the influence of education.

In the production of Speech, we find a series of movements which are just as rapid and exact, and which in like manner are effected if not by two hands, at least by Two Mechanisms, acting, like the hands of the violinist, in exact co-ordination one with the other. These two mechanisms are:—

(1.) That of the Larynx, which is the producer of the vocal element in speech, and thus is comparable to the bow-hand of the violinist.

(2.) The Oral Mechanism, by which the sounds of the larynx can be modified in tone or timbre, though not in pitch, as they pass through the oral cavity; and by which new sounds, produced within the mouth itself, can be added to the vocal tones of the larynx. The oral mechanism may in some respects be compared to the string hand of the violinist.

These Two Mechanisms must act together with a co-ordination as exact as that of the two hands of the violinist. Let there be a little inexactitude in this respect—only a little delay, let us say, in the production of the vocal element,—and speech is at once interrupted so as to become discordant and laborious. It will be the chief object of this paper to make it perfectly evident that the common defect of Stammering is due, in the great majority of cases, to the delayed action of the laryngeal mechanism; and that, apparently, in a minority of cases, it may be caused by the delayed action of the oral mechanism. A further reference to the performance of the violinist may help to make the matter clear. We are told by those who play the violin, that, when a player begins to learn to play from the score, his chief difficulty is with his string-hand, and that sometimes, in his anxiety to place the fingers of that hand upon exactly the right places, he is tempted to devote too much attention to it, to the neglect of the bow-hand. For a moment he may even forget about the bow-hand altogether, and, when no sound is produced, he may press hard upon the strings, until he discovers that the bow-hand has been neglected. So, in the common variety of stammering, the speaker neglects the laryngeal mechanism, and, when no speech is emitted, he unwittingly throws increased force into the wrong quarter, viz., the oral mechanism, whose nerve centres thus become surcharged with energy, which may overflow into other centres and produce spasmodic complications. In explaining to a stammerer the real nature of his defect, this comparison between the violinist and the speaker will be found to be of use, as it is easily grasped and understood even by young patients.

That the defect of speech in the common variety of stammering is due to Delayed Action of the laryngeal or vocal mechanism in attacking the first syllables of words, is an old proposition, which is maintained to the present day by the best writers on the subject. Among the first to make the proposition was, I believe, Dr Neil Arnott, in the very interesting chapter upon stammering to be found in his work on *Physics*, first published in 1827. In later times, Melville Bell, in this country, and Merkel and Kussmaul, in Germany, have taught the same doctrine; and, in drawing up recommendations for the treatment of the condition, they have all alike insisted upon the necessity of attending in a special manner to the production of the vocal element in speech. That the doctrine is true can be shown by many familiar proofs. Thus, however severely a stammerer may stammer in speech, it is seldom that he has the slightest difficulty in song. Many stammerers are excellent singers. One writer describes the case of a man who stammered very badly, but who won money sometimes by wagering that he would sing through a long song without stammering once from beginning to end. In my own practice, I have had one patient, a medical student, who did stammer occasionally during his musical performances; but his songs were " nigger melodies," and contained much conversation. It was in the conversational parts that he had difficulty. This did not distress him, as the audience was always under the impression that the grimaces of his blackened face were a voluntary part of the performance. This case is therefore no exception to the rule that stammerers do not stammer when they sing; and possibly some of the reported exceptions to the rule might be explained in a similar way. In like manner stammerers rarely stammer when they intone, which is a mode of singing upon a single note. Charles Kingsley stammered badly in ordinary conversation all his life, but his biographer tells that he preached well, and that he had no stammer in preaching, because he then spoke or intoned in musical monotones. Similarly the reading of poetry, with its musical cadences, is easier to the stammerer than the reading of prose. Public speaking, with its full intonations, ought, on the same principle, to be somewhat easier than private conversation; but the stammerer's nervousness generally makes it more difficult. All this tends to show that when a primary demand for voice is made, as in song or in intoned speech, and a sufficiency of energy is thereby supplied to the laryngeal mechanism, the difficulties of a stammerer can be made for the time to disappear. Few stammerers would stammer at all if they deliberately sang or intoned their conversation; but it need scarcely be said that it is hopeless to ask them to do anything so extraordinary. Yet a general injunction to the stammerer, that, in speaking, he should employ a full tone of voice, is always of use to him; as is also an injunction to practise reading aloud in a full voice for at least a few minutes every day. Melville Bell, whose experience in the treatment of the condition was very great, asserts that the success of stammer-doctors is very largely due to their almost universal practice of making their patients read aloud daily in this manner.

Recognising the great value of this prescription, I have been led to ask myself if nothing further can be done to facilitate the patient's intelligent use of the voice as one of the essential elements of speech. Experience has shown me that something else can be done, viz., to put it in the power of the patient to acquire with ease an accurate knowledge of the individual letter-sounds which compose his speech. Such a knowledge will enable him, with easy decision, to throw the voice into the vowel or consonant that contains voice, and to touch off lightly, without dwelling on it, any consonant that does not contain voice, bringing the voice out immediately in the vowel or vocalized consonant that succeeds it. The desire to communicate to stammerers a knowledge of such matters has led me to construct a physiological alphabet, so arranged that the voiced elements are separated distinctly from the voiceless, and so simply constructed as to be easily learned and remembered by even young patients. It need scarcely be said that the construction of a physiological alphabet is no new thing. Dr Neil Arnott himself, with the very same object in view, constructed one which will be given in the Appendix to this paper. Mention should also be made of the excellent phonetic alphabet of Mr Pitman, constructed by him in connexion with his phonetic method of shorthand writing;[1] of the alphabetical table of Professor Max Müller, which will be found in his well-known *Lectures on the Science of Language;* of the vowel and consonant tables given by Dr Bristowe in his work on *Voice and Speech;* of the table of consonants by Norman W. Kingsley of New York;[2] of the elaborate tables of vowels and consonants appended by Dr John Hullah to his work on the *Cultivation of the Speaking Voice;* of the still more elaborate vowel and consonant tables in the work entitled *Pronunciation for Singers*, by Alexander J. Ellis; of Melville Bell's tables in his work on *Visible Speech;* and of the phonetic studies of the alphabet which have been made by the teachers of Deaf-Mutes.[3]

Before proceeding to draw up this alphabet, let us consider in the light of a few examples the delicately co-ordinated action which is carried on in combination by the two mechanisms, laryngeal and oral, in the production of ordinary speech. Take the word **satisfy**. Here the laryngeal mechanism is called upon to touch off three separate vocal sounds, each of which is evolved by the vocal cords during an instant of approximation, viz., the sounds of **a**, **i**, and **y**; and, between these sounds, the open glottis must permit the current of air to pass noiselessly into the mouth, where it will be utilized for the production of the voiceless consonants, which are made, as it were, to clothe the vowels in front and behind. Let the naked vowels, as they sound in this word, be pronounced, and then the full word itself, and the extreme delicacy and exacitude of the three separate co-aptations of the vocal cords will be realized. Let there be any delay in the pronunciation of the first vowel, and the initial **s** will be hissed and prolonged, exactly as it is by the stammerer. But the voice is not an exclusive possession of the vowels: many of the consonants are also in part made up of voice. Take the word **wonder**, for example. Here every letter, consonant and vowel alike, contains voice, so that the larynx has to maintain its vocal cords in co-aptation throughout the whole word, which may even be repeated many times in a deliberate and continuous hum. But add to this word the final syllable **ful**, and, as the word, with this addition, is being hummed over, note the moment of interruption of the hum during the production of the voiceless **f**. For a moment the vocal cords have been thrown apart to permit of the passage of voiceless air for the **f**, but they are immediately brought together again for the production of the vocal **u**. These examples may suffice to show what a delicate and exact work the larynx has to perform in supplying the vocal element to the vowels and vocalised consonants, and in intermitting the voice-production when the air is required for consonants that contain no voice.

---

[1] See Pitman's *Phonographic Teacher*, p. 4, *et seq.*

[2] Published in the *Internationale Zeitschrift für Algemeine Sprachwissenschaft*, vol. iii. p. 246. This paper demonstrates in an ingenious way the parts of the palate, etc., with which the tongue is brought in contact during pronunciation of certain consonants.

[3] See *Education of Deaf-Mutes*, by Thomas Arnold.

Let it be noted that a stammerer experiences his difficulties only, as a rule, during the production of the first syllable of an ordinary word. The two mechanisms, laryngeal and oral, are, as it were, for the moment out of gearing, and can be thrown into gearing only by an effort; when this effort succeeds in educing the first syllable, the others follow, as a rule, without difficulty, and it is only after the completion of the word that the two mechanisms again fly out of gearing.

The Physiological Alphabet.[1]

Coming now to the description of the physiological alphabet, a reference to the alphabetical table will show that a vocal element is present not only in the vowels, but also in the majority of the consonants. It should be clearly understood, that every vocalized letter-sound is the product, not of one of the mechanisms exclusively, but of both combined. Even the vowels are not exclusively the products of the larynx, but owe their specific characters largely to the operation of the oral mechanism.

Vowels.—A little experiment with the piano, described by Helmholtz, brings home to one very clearly the true nature of a vowel. Let the cover of the piano be lifted up so as to expose the wires, and let the dampers be raised from these by pressure of the foot on the loud pedal. Then, when the head is lowered to within a foot or two of the sounding-board, let one of the vowels such as **o** or **e** be sung in a clear, loud tone of low pitch. The piano will not merely echo back the note in its correct pitch, it will distinctly, in its echo, pronounce the vowel, **o** or **e** as the case may be. This is due to the fact that the different vowel-sounds consist in different combinations of the note with over-tones or harmonics. The voice, therefore, does not only excite a sympathetic vibration in that wire of the piano which represents its fundamental note and pitch, it also excites similar vibration in a number of other wires, which represent the over-tones or harmonics; and as these over-tones differ in the different vowels, the piano reproduces the vowels distinctly and specifically. In the production of vowels, the larynx thus furnishes the fundamental note and its harmonics, but this material is modified in passing through the oral cavity, by the action upon it of a Resonating Chamber capable of great variation in size and shape. The harmonics are individually suppressed or exaggerated, so that the sound is moulded into the acoustic figure proper to the vowel that is being produced. When the vowel is sung over the piano, this acoustic figure is represented by the grouping of the wires which are called into sympathetic vibration. It is chiefly to Willis,[1] Wheatstone,[2] and Helmholtz that we owe our knowledge of the real nature of vowels. The subject will be found fully discussed in Helmholtz's great work on *The Sensations of Tone.*

---

[1] It may be of advantage to the reader to keep the Alphabetical Table of the frontispiece open before him when reading the following description of it.

In English grammars the vowels are given in the order **a**, **e**, **i**, **o**, **u**, and it is expected that these should be pronounced in the English manner. But there are well-known objections to this order and pronunciation. The English **i** is really not a simple vowel-sound, but a compound of two vowel-sounds that may be represented by the letters **a i**. So, also, the English **u** is a compound sound really representing **y u**. It is better, therefore, to adopt the Latin pronunciation of the vowels, which gives to each a single definite sound. Further, in arranging them, it is best to place them in an order which will represent a gradual transition from the narrowest and tightest shape of the resonating chamber, that for **i** (English **ee**), on to the hollowest and largest, viz., that for **o** and for **u** (English **oo**). The difference in the chambers for **o** and for **u** (**oo**) is that in the **u** (**oo**) sound the rounded labial opening is of smaller size than that for **o**. The order thus becomes **i**, **e**, **a**, **o**, **u**. Any one, when deliberately pronouncing the vowel-sounds one after the other in this order, and with the Latin pronunciation, can realize from his own sensations that the resonating chamber within the mouth, very tight and narrow when the first vowel is being sounded, opens up more and more with each succeeding vowel, until, with the final **o** and **u** (**oo**), the chamber has attained its largest dimensions.

It should be carefully noted that in no one of these pure vowel sounds is there, throughout the oral cavity, any constriction sufficient to give rise to audible friction from the passing air. Let such friction be added, and in some instances the vowel will become a consonant. This is seen when the vowel sound **i** (**ee**) is pronounced with such accompanying friction of air. It then becomes the sound of the initial y in such a word as yes. So, again, when the pure vowel-sound u (oo) is made to pass through a very small labial orifice, it becomes converted by the added friction into a w, as in the word weary. Y may therefore be described as a tight i (ee), and w as a tight u (oo). These two consonants are thus closely related to the vowels, and may be regarded as transitionary steps or stepping-stones between vowels and consonants. They are both obtained from vowels by the simple addition of a fricative element, due to the friction of the escaping air. This relationship of y and w to the vowels is described by Merkel.[1] It is represented in the alphabetical table. As regards the number of the vowels, it may be remarked that there are many possible shades of breadth in the pronunciation of each, and these might fairly justify a considerable enlargement of the list by the insertion of a number of new vowel-letters to provide for them: but such shades of breadth are not of sufficient importance in the present connexion to be here described in detail; nor does it appear necessary to do more than refer in a word to variations in length, by reminding the reader that the same vowel may be long or short.

---

[1] *Trans. of the Cambridge Philosophical Society*, vol. iii. p. 231.

[2] *London and Westminster Review* for October 1837.

Consonants.—Coming now to the list of Consonant-sounds, an examination of the alphabetical table will show that they are there arranged in three vertical columns, of which one column, the first, contains the voiceless consonants, whilst the second and third contain the consonants in which voice is a component element. In the sounds of the third column—Nasal Resonants—the voice is, by the dropping of the soft palate, made to pass freely through the nose, the passage through the mouth being closed. It need scarcely be said that each consonant of this table should be pronounced as the letter is pronounced during the enunciation of a syllable containing it. Thus the letter s should be pronounced, not as ess, but as the sibilant sound at the beginning of such a word as son; and so with the others. Besides being divided vertically into columns, the consonants of the alphabet, it will be observed, are arranged horizontally in groups, according to the part of the mouth which is the seat of their production. The groups begin anteriorly, with the consonants which are produced at the lips—the Labials, and pass backwards, by the Labio-Dentals, Linguo-Dentals, and Anterior Linguo-Palatals, to the group which is produced most posteriorly, viz., the Posterior Linguo-Palatals. There are, in all, five groups. Of these, three are of leading importance, viz., the Labials, Anterior Linguo-Palatals, and Posterior Linguo-Palatals. These three groups are produced at the three great Stop-positions. In these three stop-positions there are greater possibilities of producing a variety of consonant sounds than in the other two. It is possible at each of the three stop-positions either to stop the current of air, or to allow of its escape with fricative noise through a narrow opening; and each of these actions can be performed with or without the addition of voice supplied by the larynx.

---

[1] *Physiologie der Menschlichen Sprache*, p. 80.

Let us note in detail what effects can be produced at each of the Stop-positions, and also at the two other positions where fricatives alone can be produced.

A. Taking first the Anterior or Labial Stop-position, we note that it can produce—

(1.) The voiceless **p**, when there is complete closure of the lips, and the air is compressed behind the barrier. Occurring at the beginning of a word, this mute and voiceless **p** communicates an Explosive character to the vocal sound which follows it in the syllable, as in the word **pot**. Occurring at the end of a word, the same **p** gives the effect of a sudden and silent Stop, as in the word **top**.

(2.) The Voiced Explosive **b** is also produced at this position. It is merely **p** with voice added, the air which accumulates behind the barrier being, as it were, voice-laden. The explosive and stop effects of **b** may be recognised in such a word as the monosyllable **Bob**.[1]

(3.) Closing the lips and sounding the voice as in **b**, drop the soft palate, and let the air and voice escape through the nose, and the effect will be to produce the Nasal Resonant **m**.

(4.) In these three consonants the labial stop-position was closed; but let it now be opened slightly, so that the air may escape by a small orifice between the lips. If voice be added the effect will be the production of **w** as in **weary**, this consonant, as already explained, being a Voiced Fricative made up of the **oo** sound and the fricative noise produced by the passage of air through a very narrow opening.

(5.) Can we here produce a simple Voiceless Fricative? I hold that we can, and that we actually do so when we pronounce the initial **wh** in the word **which**, for example, as words beginning with these letters are pronounced in Scotland. It should really be spelt **hw**, or more correctly *w*w; the first of these letters being given voicelessly, and the second with voice. In England the voiceless letter has been dropped, and **which** has now been softened into **wich**.

---

[1] On careful experiment I find that for the production of B it is not absolutely necessary that the air accumulating behind the barrier should be voice-laden. All that is absolutely necessary is that the voice should be emitted *as soon* as the air. In the pronunciation of an initial P the air begins to escape just an instant before the voice. This can be made evident if a house-key be held before the mouth as if for whistling, and Pa and Ba be pronounced over it. No doubt the same distinctions exist between T and D and K and G. In teaching stammerers, however, it is well to use the pronunciation given in the text.

It has been pointed out to me that the pressure of air behind the barrier is greater in the voiceless than in the voiced explosives. In the voiceless explosives the pressure of the air in the mouth is the same as in the trachea; but in the voiced explosives the air meets with some amount of obstruction at the glottis owing to the approximation of the vocal cords in phonation; and this obstruction in the larynx causes the air pressure to be less in the oral cavity than in the trachea.

These are the five possibilities at the first or anterior stop-position. Their relations to each other are plainly shown in the Alphabetical Table.[1]

B. Turning now to the Second or Middle Stop-position—the Anterior Linguo-Palatal—we find that five similar consonants are produced here also, as well as two others in addition. The complete stop is here effected by the apposition of the tip and edge of the tongue to the upper gum, which is the anterior part of the hard palate. **T**, the Voiceless Explosive, corresponds in its method of production and in its effect to **p**. **D** is simply **t** with voice in the air that accumulates behind the barrier. **N** is produced as **d**, except that the soft palate is lowered and the voice allowed to escape through the nose. **Sh**, as in **she**, is the Voiceless Fricative of this position, produced when the stop is not complete; and **zh**, as in **trea*s*ure**, is **sh** with the addition of voice. (In English **zh** is never spelt **zh**, and never occurs as an initial consonant; but in French it is common as an initial, being represented by the letters **j** or **g**, as in **Jean** or **George**.)

The tip of the tongue being, above all parts of the mouth, capable of rapid and delicate movement, it is not surprising to find that in this, the middle stop-position, two Additional Fricatives are produced, viz., **r** and **l**. **R** is produced partly by the purring friction of the air in passing over the vibrating tip of the tongue, and partly by the voice: it is a Voiced Fricative, which can be produced with different degrees of roughness. **L** is also a Voiced Fricative, produced by the fricative passage of air with voice over the sides of the tongue, whilst the tip is in contact with the palate at the stop-position. In English there are no voiceless fricatives corresponding to **r** and **l**; but in Welsh there is a voiceless **l**, always succeeded by a voiced one, as in the initial **ll** of **Llangollen.** So far as I am aware, no language has utilized the voiceless **r**.

A curious point in the production of the letter **r** has been brought under my notice by my pupil Mr Thomas Macdonald, son of the late Dr Angus Macdonald. It is that the trilling motion of the tongue is not effected by the middle of the tip, but, in most individuals, by the tip at the right side of the middle line. Is this an indication that the speech energies are not distributed with absolute equality to the two sides of the tongue, but that the tongue in speech is to some extent "right-handed"? It would be interesting to find out, by further observation, if left-handed people trill with the left side of the tongue-tip.

---

[1] Babies are fond of producing at the lips a trilling noise, sometimes without and sometimes with voice. Some authorities have described it as a labial R, and in Germany it is called the coachman's R, because it is used for urging horses; but, as it is not employed in European speech, I have not incorporated it in the Alphabetical Table.

From the above description it is seen that seven consonantal sounds are capable of being produced at this, the most remarkable of the stop-positions.

C. Taking, lastly, the Third or Posterior Stop-position—the Posterior Linguo-Palatal—we find that, like the first or anterior, it produces normally only five consonants. We find, further, that whilst complete stoppage is effected by the co-aptation of the back of the tongue to the palate, a considerable latitude is allowed, in this position, as to the exact spot on the palate against which the tongue may be pressed, or towards which it may be approximated. This latitude permits of an easier transition from the consonant to the succeeding vowel. Taking, for example, the words **key** and **coal,** it will be found that in **key** the **k** sound is effected by the contact of the tongue with the hard palate pretty far forward; whereas in **coal** it is brought about by the contact of the tongue with the soft palate pretty far back. So also with the fricatives: **h** in **here** is produced further forward than is the same letter in the word **home.** The five consonants which this position is capable of producing are—(1), the voiceless explosive **k,** corresponding in its mode of production to **p** and **t**; (2), the voiced explosive **g,** as in **gum**; (3), the nasal resonant **ng**; (4), the voiced fricative initial **y,** as in **yes**; and (5), the voiceless fricative **h** or **ch.**

Much discussion has taken place as to the situation at which the voiceless fricative **h** (the aspirate) is produced. Some hold that it may be produced anywhere in the cavity of the mouth by the friction of the air against the walls of the oral cavity. Kussmaul, on the other hand, asserts that it is well known that the aspirate is produced by the rush of air through the widely open glottis. Like some others, I venture to dispute both of these propositions, and hold that the aspirate is the voiceless fricative of the posterior stop-position, as above explained. I also hold that the soft **ch,** as in the German **ach** or the Scotch **loch,** is merely the aspirate, occurring, in a somewhat pronounced form, at the end of a syllable instead of at the beginning. The identity of the **h** and the **ch** will be recognised if the two German words **ich hier,** or the two Scotch words **Loch Hourn,** be pronounced slowly and in continuity one with the other.

There is another consonant of a somewhat abnormal character which the posterior stop-position is capable of producing. This is the guttural or Burring **R,** which is characteristic of the dialect of some districts, such as the county of Northumberland, and which also is otherwise a frequent peculiarity of speech. It is produced by the trilling motion of the uvula against the back of the tongue. In Paris it is said to be fashionable to use this abnormal **r,** but in this country burring is regarded as a defect of speech.

Besides these three great Stop-positions there are two other positions, both of them in connexion with the upper teeth, where several fricatives, voiced and voiceless, can be produced. These are:—

D. The Labio-Dental position, where **f** and **v** are produced by the passage of air between the upper teeth and the lower lip, **f** being voiceless, and **v** being **f** plus voice.

E. The Linguo-Dental position, where the tip of the tongue, in contact with the edge of the upper teeth, allows of the production of two varieties of **th**—a voiceless, as in **thin**, and a voiced, as in **thine**; and where, applied against the back of the teeth, it allows of the production of the sibilant **s** and its vocalized equivalent **z.**[1] (The voiced **th** used in old Anglo-Saxon to be spelt **dh**.)

In the alphabetical table, each of the various groups of letters is associated with a sentence whose words begin with the letters of the group. The value of such sentences for purposes of diagnosis, and for purposes of tuition, is obvious. A well-selected stock of such sentences enables one to diagnose and analyze a case of faulty speech with ease and without loss of time. In the tuition of young stammerers, also, the sentences afford much assistance, as they are so easily remembered. For the sentences I have to thank my house-physicians and pupils.

To sum up this part of the subject, the consonants may conveniently be divided into the three following classes:—

1. The Typical Five of each Stop-position, viz., a voiceless and a voiced explosive or stop, a nasal resonant, and a voiceless and a voiced fricative.

2. The extra fricatives that the second and third stop-positions

---

[1] It has been pointed out to me that **s** can be pronounced when the tip of the tongue is applied to the lower instead of the upper teeth. In this case the dorsum of the tongue instead of its tip acts with the upper teeth in producing the **s**. On careful experiment I find that of the whole eleven consonants which the tip of the tongue normally takes part in the formation of, viz., **th**^{1}, **th**^{2}, **s**, **z**, **sh**, **zh**, **t**, **d**, **n**, **l**, and **r**, I can pronounce all, except one, when the tip of the tongue is held fixed behind the arch of the lower teeth, the dorsum of the tongue being employed instead of the tip in forming them. Even the **th** sounds can be thus produced if the lower jaw be protruded so as to permit of the dorsum of the tongue being brought into contact with the edges of the upper teeth. The only exception is **r**, which, without the agency of the tongue-tip, can only be given as the uvular or burring **r**. These remarkable capabilities of the dorsum of the tongue help to explain the similarly wonderful capabilities of the stump of the tongue after partial excision of the organ.

Another very important point about the formation of **s** is that, whether produced by the tip or by the dorsum of the tongue, it is not necessarily formed at the back of the upper teeth. It can be formed almost equally well farther back, at the upper gum (2nd stop-position), where **sh** is formed, but when produced here it is less sharp and hissing than when formed at the back of the teeth; **s** can thus be pronounced pretty well in the absence of teeth. Some children learn to pronounce **s** sooner than **sh**, others **sh** sooner than **s**.

are capable of producing, viz., the **l** and **r** of the second position and the burring **r** of the third.

3. The voiceless and voiced fricatives produced at the two dental positions—the Labio-Dental and Linguo-Dental—these being six in all, viz., the voiceless **f** and voiced **v** at the Labio-Dental, and the voiceless **th** and **s** and voiced **th** and **z**, at the Linguo-Dental.

(It should be remarked that of these six the last four are formed in part by the tip of tongue. Adding these four of the Linguo-Dental position to the seven of the Anterior Linguo-Palatal, we have thus, in all, eleven consonants that the tip of the tongue takes part in the formation of. How well the dorsum of the tongue can play the part of the tip when the tip is fixed behind the lower teeth is shown in the footnote to page 299.)

Comparison with the Ordinary Alphabet.

It will be useful to compare the physiological alphabet above explained with the alphabet at present in general use. This will be easily done if the ordinary alphabet be printed as below, and the letters of it which are omitted from the physiological alphabet, or are only in part represented therein, be denoted by special type thus:—

a b ***c*** d e f ***g*** h i ***j*** k l m
n o p ***q*** r s t u v w ***x*** y z.

Among the letters thus indicated in special type, ***c*** is not represented in the physiological alphabet, because its value is always exactly either that of **s** or that of **k**; **q** is not represented, because it is of no value without an attached **u**, while **qu** has exactly the value of **kw**; **x**, again, has the same value as **ks**, and is therefore not in the physiological alphabet; **g**, in the physiological alphabet, represents the hard **g** as in **gum**, while the soft **g**, as in **George**, is not represented by any single letter, its phonetic translation being **dzh**; the same translation applies also to the English **j**, as in **John**. In French, **j** and soft **g** are pronounced without the initial **d**, as in **Jean** and **George**. It is very important to explain to a stammerer the phonetic meaning of the English **j** or soft **g**. Some years ago I had sent to me at the Royal Infirmary, by my friend Prof. Chiene, a boy of 12, who stammered so badly that he had been sent by his doctor to the Professor for surgical treatment of his organs of articulation. When he was passed on to my wards he was asked his name; but he struggled long and severely without being able to pronounce it, and broke down at last in a burst of weeping. His name was James. When it was pointed out to him that his name really began with **dzh**, and he was shown how to throw the voice into the initial **d**, he became able to pronounce the name with ease; and when, some weeks afterwards, he was shown by me to a class of post-graduates, he gave his name, and replied to several questions, without the slightest difficulty. In this connexion it may be added that the soft **ch** in **church** is phonetically **tsh**, and is thus the voiceless equivalent of the voiced **dzh** above referred to.

The Phenomena in Stammering.

The general nature of the defect of speech in stammering has already been explained, and it has been shown that the starting-point of the defect is a Want of Promptitude in the production of the vocal element in the first syllables of words. It remains to illustrate this proposition by examples from the different classes of letters, and to show in what degree the difficulty is exhibited during the pronunciation of letters belonging to each of these classes. Speaking generally, it may be said that the difficulty is least in the Vowels, which are vocals, and contain voice as their predominant element. The demand for voice in the production of initial Vowels is of so primary a nature, that the larynx usually supplies it without difficulty, just as the still greater demand for voice in song suffices, while the stammerer sings, to abolish the defect *in toto.* On the other hand, the Voiceless Explosives **t p k** occupy a place at the opposite extremity of the scale. They ought to be touched off lightly and easily; but, in stammering, when the succeeding vocal element in the syllable is not properly brought up to time, the stammerer, ignorant as to the cause of the difficulty, throws his energy into the wrong mechanism, and exerts a strong pressure at the stop-position, which may betray itself either in a Silent Sticking at the consonant, or in a Stuttering voiceless Repetition of its explosive effect. Instead of easily pronouncing a single small **p**, he produces a succession of these, or only one prolonged capital **P** of large size. The Voiced Explosives are only a degree less difficult than the voiceless. They are produced in the same manner and in the same variety, their radical defect in the stammerer being the absence or the insufficient supply of the vocal element, which, in the case of a voiced explosive, should be thrown boldly into the letter itself. The other consonants, namely, the Voiceless and Voiced Fricatives and Nasal Resonants, occupy an intermediate place between the vowels and the explosives, as regards the difficulty in their production. In the Voiceless Fricatives, such as **s** or **h**, the sound of the letter is prolonged whilst the speaker waits for the lagging voice-sound of the succeeding letter. In the Voiced Fricatives and the Nasal Resonants, the stammerer produces the letter voicelessly, or with feeble and intermittent voice, and dwells upon it indefinitely. The voice is not thrown boldly into it as it ought to be, and the speaker therefore feels that the proper sound has not been produced. Thus in the word **mother** he emits a feeble, prolonged, and almost voiceless **m**; but if he is taught to throw the voice boldly through the nose, his difficulty, in that particular instance, entirely disappears.

The following list of sentences, arranged in the usual order of difficulty, will be found useful in testing the capabilities of a stammerer, and in differentiating the letters with which he may have special difficulty:—

(1.) VOWELS (i, e, a, o, u).—**Eels ail amid ocean ooze.**

(2.) VOICED FRICATIVES (*the second column minus its three Explosives*).—**We visit the Zulus, like ramblers, yearly.** (zh *need not be represented, as it never occurs at the beginning of a word.*)

(3.) VOICELESS FRICATIVES (*the first column minus its three Explosives*).—**Far shores seem thinly hazy.**

(4.) NASAL RESONANTS: m, n, (ng).—**My nephew.** (ng *need not be represented, as it never occurs at the beginning of a word.*)

(5.) VOICED EXPLOSIVES (b, d, g).—**Best gold dust.**

(6.) VOICELESS EXPLOSIVES (p, t, k).—**Two poor comrades.**[1]

Although the above table represents the order of difficulty in the great majority of cases of stammering, the Vowels being most easy and the Voiceless Explosives most difficult, it does not represent the order of difficulty in all cases. I have had at least two cases in which the greatest difficulty was found in the pronunciation of the Vowels, and in not a few I have found the difficulty almost equally distributed over the whole list of sentences. When there is difficulty with the vowels they are apt to be produced with feeble voice in an interrupted and tremulous manner.

Analysis of the Phenomena.

Passing now to the more detailed analysis of the phenomena of stammering as exhibited in the Vocal and Oral Mechanisms, we may begin with the Vocal Mechanism, whose want of promptitude is the primary cause of the difficulty.

It should be understood that within the term Vocal Mechanism is to be included not merely the Larynx, which is the instrument of voice, but also the Lungs and Muscles of Respiration, which supply the larynx with the necessary blast of air.

A. *Faults in the Vocal Mechanism*, due to imperfect innervation.

1. Want of Promptitude in the supply of voice during the pronunciation of the initial syllable.

---

[1] The following additional sentences will be found of use for testing purposes:—

1. Mother make more mustard. No, no! not now.
2. Billy Button bought a buttered biscuit.
3. Davy Doldrum dreamt he drove a dragon.
4. Gaffer Gilpin got a goose and gander.
5. Peter Piper picked a peck of pepper.
6. Tiptoe Tommy turned a Turk for twopence.
7. Kimbo Kemble kicked his kinsman's kettle.

For these and many other similar sentences, see *Peter Piper's Practical Principles of Plain and Perfect Pronunciation.*

The voice lags behind, and the energies are misdirected into the oral mechanism, as already explained. Sometimes this is the only fault in the vocal mechanism, the lagging voice being, in such cases, strong enough in tone, when it is produced.

2. The voice may be not only lagging, but also feeble in quality —the *Leise Sprache* of the Germans. It is low and feeble, because the speaker often neglects to fill his lungs with air, and is attempting to speak from a half empty chest.

3. There is often a marked sense of fatigue in the walls of the chest after the effort of speaking, due to the condition of things that has just been explained.

4. During the struggles of the stammerer, the voice, in some cases, may suddenly break from its normal baritone or bass into a piping Falsetto, the effect of which is sometimes very grotesque. This was particularly marked in one of my own cases.

5. There may be Drawback Phonation. This is the production of speech during *in*spiratory effort, the vocal cords being approximated, and made to vibrate, when air is being drawn in between them. This is a common phenomenon among stammerers. I have notes of one striking case in which it exists *per se*, as the troublesome remnant of a severe stammer of the ordinary type. The patient himself gave a very distinct account of the development of Drawback Phonation in the course of his case. He had stammered in the usual manner up to the age of about fifteen, but at that period of life he began to make great efforts to overcome his impediment, and found that, when in difficulties, he could always pronounce the word by having recourse to this "drawback" method of phonation. Practising this method voluntarily at first, he soon found that it became involuntary and habitual with him. It now remains as the sole remnant of his former impediment.

B. *The Oral Mechanism.*—Faults due to surcharge of energy.

1. The lagging of the voice, and the misdirection of energy already explained, cause the stammerer to surcharge his oral mechanism with energy, so that he sticks or stutters at his explosives, and prolongs his fricatives and nasal resonants, producing those of the latter which contain voice voicelessly or with feeble vocalization. He sticks and stutters very specially upon his explosives, voiceless and voiced.

2. From the nerve centres of oral articulation thus surcharged, an Overflow, in many cases, occurs, so that spasmodic and involuntary movements may be excited, both within the organs of articulation and in other parts of the face, or even of the body. Among the spasmodic movements thus produced, may be enumerated trembling movements and spasmodic twitchings of the lips and cheeks, working of the jaw, forcible winking of the eyes, twitching or tonic contraction of the sterno-mastoid on one or both

sides, and sometimes spasmodic working of the arms. Some patients have been known even to stamp with the feet. One of the most unsightly spasms is that affecting the tongue. I had one patient, a highly educated and intelligent lady, who stammered very severely, and whose spasmodic phenomena specially affected the tongue. In the midst of her difficulties, she frequently lowered her head, turning it to one side, and at the same time protruded her tongue to its utmost extent at one side of the mouth, while she covered the unsightly protrusion with her hand. The case seemed to be merely an example of such spasmodic overflow as more commonly displays itself in spasm of the facial muscles. The overflow probably started from a surcharged portion of the hypoglossal nerve centre, and passed into other portions of the same centre which ought not to have been stimulated at all. Kussmaul treats of this protrusion of the tongue, which he calls Aphthongia, under a separate heading, as being apart from the ordinary phenomena of stammering; but the case I have referred to, besides having this protrusion of the tongue, stuttered in the ordinary way upon the explosives, and the ordinary treatment brought about a marked improvement. At the same time it is probable enough that chorea, or certain local spasmodic affections of the nature of motor tic, may produce similar involuntary protrusions of the tongue independently of stammering.

C. *Overflow into the Upper Glottis.*—In a few cases the energy, imperfectly supplied to the vocal mechanism, flows excessively, not only into the organs of articulation, but also into the upper or non-vocal part of the larynx. This part consists of the structures that have the false cords for their inferior margins, and have behind them the hollow spaces called the ventricles of Morgagni. It was my good fortune and privilege, in 1865, to demonstrate for the first time, by experiment and otherwise, the Valvular Actions of the larynx. In my inaugural dissertation, presented to the University of Edinburgh in 1865, and published in the *Edinburgh Medical Journal* for September 1866, I showed, with reference to one of these valvular actions, that this upper part of the larynx is a true valve which renders it possible for air to be held imprisoned within the chest under strong pressure, during such acts as those of straining and the compressive stage of coughing. My observations have been fully confirmed by a careful investigation carried on conjointly by Dr Lauder Brunton and Dr Cash, who published their conclusions in the *Journal of Anatomy and Physiology* in 1883; and these observers have further, in a very able manner, illustrated the matter by experiment on the lower animals, and by investigations into the structure of this part of the larynx in different classes of animals. To any one who reads these two papers, it must be evident that this valvular action is the real use of the false cords and of the ventricles of Morgagni. It is to be hoped that at some future time the attention of physiologists in this country will be attracted to this important subject. So far as I am aware, no adequate description of the valvular actions of the larynx has yet been incorporated in the physiological text-books. This is, however, not the place to enter upon the discussion of the valvular actions of the larynx; and it will suffice merely to ask the reader's attention to one of them, namely, the valvular action of the Upper Glottis, which is represented by the false cords and the ventricles of Morgagni. This part of the larynx remains unclosed, during Phonation, when the true cords below are in apposition. What would happen if, during phonation, the false cords closed over the true, and shut off the passage of air by their valvular action? Exactly what does happen in a somewhat rare variety of stammering. The patient's voice is at once interrupted, and, with open mouth and congested face, he silently struggles without effect to emit the imprisoned air. During his repeated attempts to speak, the seat of impediment may be diagnosed if one observes the peculiar sound which is made from time to time, when the upper glottis is thus being spasmodically closed over the lower. It is a sound not unlike the **k** sound in **huck,** but produced lower down in the throat, and without contact of the back of the tongue with the palate. This variety of stammering is described by Kussmaul under the name of "Gutturo-Tetanic," and the open mouth is mentioned as one of its characteristics, but its mechanism is not satisfactorily explained by him. The fact is, that we have here in the upper part of the larynx a fourth stop-position which is not utilized in European speech, although perhaps the true gutturals of the Arabic may be produced by it. Its explosive is a cough, and its voiced fricative is a "clearing of the throat." I have had only one case in which the Gutturo-Tetanic overflow was the chief phenomenon. Arnott made the great mistake of supposing that the difficulties of stammerers generally were due to the closure of the glottis.

The difficulties and troubles of a patient who stammers badly may be realized when one studies such an analysis as the above of the phenomena which result from this faulty distribution of energy in the various mechanisms. Kussmaul has given a good picture of the painful struggle. Speaking of the stutterer he says, "He closes the oral canal at one or other of the closing points, according to the nature of the letter to be articulated, and this he does as well as a man who possesses the faculty of speech could do it; instead, however, of allowing the vowel to follow without delay, he presses his lips, or his tongue and teeth, or his tongue and palate, more firmly together than is necessary; the explosive escape of the air does not take place, the other muscles of the face and those of the glottis and even the muscles of the neck become spasmodically affected like those of articulation, gesticulatory movements are made, the abdomen is retracted, the head is drawn backward, and the larynx is drawn forcibly upward, until finally he works himself into a state of frightful agitation; his heart beats forcibly, his face becomes red and blue, his body is bedewed with perspiration, and he may present the appearance of a complete maniac."

The Causation of Stammering.

The phenomena of stammering having been thus pretty fully described, a few words may now be said about its causation.

It is notorious that the condition is developed much more frequently in the male sex than in the female. For every female case there are probably four or five males. How this should be, it is difficult to say; but male children are, as a rule, slower in learning to speak than female children; and certainly this derangement of speech is commoner among them.

It would appear that some children, perfectly healthy in constitution and not of neuropathic diathesis, acquire the defect by simple imitation of their seniors who may happen to stammer. Stammering is, however, especially common among children of neuropathic inheritance. It is no indication of any defect of intellect, and may occur in children and adults who are gifted with very bright intelligence; but, nevertheless, even in the very intelligent, it may be found associated with nervousness and excitability, as well as sometimes with more distinct indications of instability of the nervous system. Occurring in a nervous subject, it is apt to aggravate his nervousness and even to produce an unsociable and morbidly shy condition of mind.

In nervous subjects, temporary conditions which aggravate the nervousness always lead to exacerbations of the stammering. Thus the presence of strangers who require to be spoken to puts a strain upon the stammerer. Often he cannot go with confidence to make purchases in a shop; and I have known a boy, going home to the country for his holidays, sit crying bitterly at a railway station because he dared not make the attempt to ask for his ticket. So also any depressing influence, such as exhausting work or exhausting dissipation, or a sleepless night, or any temporary disturbance of health, is apt to make the stammerer worse for the time being.

Sudden and Violent Emotion, above all a severe fright, has often been known to produce stammering in children, and even in young adults. It seems certain that this and many other nervous disturbances are produced most frequently by fright when the constitution of the patient is essentially neuropathic or hysterical.

The defect may be transmitted by Inheritance, especially in neuropathic families. No doubt in some cases the apparent transmission is really due in large part to the imitation of a parent's speech by the children.

A degree of stammering more or less marked is found associated with many defects of speech that are of graver significance than itself. It is thus frequently found to be one of the elements in the deranged speech of imbeciles and idiots, to be present in the speech characteristic of general paralysis of the insane, and also in the speech of patients who are suffering from true aphasia. Where it is thus associated with real organic disease or defective development, its treatment is always difficult and unsatisfactory; but when, as in the vast majority of cases, the intelligence is up to the average, the treatment may be undertaken with good hopes of producing a complete cure, and the certainty of at least bringing about a very marked amendment.

Treatment of Stammering.

Any one who has read the foregoing account of the causation and phenomena of stammering would be able, it is hoped, to draw up a scheme for the scientific treatment of the condition.

My own plan is as follows:—

1. First of all, it is convenient to impress upon the patient the simile of the violin player, and to show him, as forcibly as possible, that it is his bow-hand, or rather his larynx, that is at fault; and that he must therefore pay no attention to his mouth, but attend to his voice, and speak always in a full and resonant, though natural tone. With the view of cultivating his voice, he is recommended to read aloud for at least ten minutes every morning. He may begin with poetry, and afterwards, as reading improves, he may take to prose. If he be possessed of a musical ear it is well for him further to cultivate his voice in song, and learn to read music at sight. Everything that helps to give him a ready command of voice will help him out of his difficulty. Arago, somewhere in his writings, tells, as to Orfila, the great medical jurist, that on being severely frightened, when a boy, he was thrown into such violent emotion that immediately afterwards he began to stammer badly; and that he continued to do so for some years. At the recommendation of the family priest, he was induced to become a member of the Church choir; and, whilst he was developing into a very excellent singer, he gradually got quit of his defect of speech. To provide for circumstances which make the patient specially nervous, it is sometimes not amiss to recommend him to deliberately intone or sing, at the ordinary conversational pitch, the first word he utters in conversation. Among my stammering patients, I had, some years ago, a boy, who, when sent by his parents to make purchases in shops, always took his little sister with him to act as his interpreter. As he had a good musical ear, I taught him to intone his first word; and, by way of experiment, sent him to a shop to buy some oranges. He was enabled to effect his purchase without any stammer by simply intoning the word "If," when beginning his request with, "If you please."

2. A stammerer should be taught the physiological alphabet and its sentences. With the aid of the latter, he will very soon be able to draw up the alphabet for himself, and to understand it in every part.

3. He should also be made to read and learn the second series of sentences given at page 302; and the letters that he stammers on in them must be carefully noted, in order that their proper mode of enunciation may be thoroughly explained to him. In like manner, when at his daily occupation, he must himself note carefully the words that give him difficulty in conversation, so that in the evening he may find the key to their pronunciation on reference to the alphabet, and be able to practise upon them specially. In the comparatively rare cases in which the patient stammers markedly upon initial vowels, it is well to confine the patient's attention for days or weeks to exercises upon vowels and words beginning with vowels. When the power of enunciating vowels readily is acquired, the patient can proceed to practise upon the consonants.

4. In concluding the teaching of the alphabet, the teacher will do well to give the pupil such a word as **street**, and to ask him which of its letters first contains voice. If he has learned the alphabet well, he will know that the first voiced letter is **r**. Should this word be difficult of pronunciation, he will do well to practise first the pronunciation of **reet**, and then to try **street** itself, touching off the **st** very lightly and throwing the voice boldly into the **r**; and so with other words with which he may have similar difficulties. With the aid of the two sets of sentences, the teaching of a young stammerer is by no means difficult. He will soon know the alphabet very familiarly, and will be easily made to understand the all-important distinction between the letters that contain voice and those that are voiceless.

5. When there is a tendency on the part of the patient to attempt speech from an empty chest, he should be instructed to fill the chest by inspiration at suitable intervals. It is wonderful, however, how seldom much training of this kind is required, if the patient has grasped the great principle that he must *speak with voice.* With this principle well established in his mind, he fills his chest for voice production instinctively when a new supply of air is needed.

6. In all cases where the patient is of nervous constitution, and apt to be depressed or put out of health by such causes as have already been enumerated, it will be well for the physician to pay special attention to the patient's health and mode of life, and, by tonics and tonic regimen, to do everything in his power to elevate the nervous tone and improve the general condition.

7. In cases of exceptional difficulty, it will, perhaps, be well to recommend that the patient should be placed under a tutor or specialist, who has time to devote much attention to his daily tuition. It is unfortunate that, at present, most of those who make

a specialty of the treatment of stammering are persons without scientific training or knowledge. Many of them have secret methods which they bind their pupils not to divulge; and some of them teach their pupils to make exaggerated movements of the lips and face when talking. So long as the mystery and secrecy of a method is maintained, the imagination of the stammerer is worked upon; and if he has confidence in the remedy, this very confidence, and the courage it gives him, bring about, often enough, marked improvement in his speech. But the improvement is temporary, and the secret method always loses its efficacy when it loses its secrecy. It would be easy to give an account of some secret methods which have had a great reputation in their day, but it would really be trespassing too much upon the reader's patience. If he is interested in the history of them, he will find much information about them in an article by Guillaume, which will be referred to in the Appendix to this paper. Rhythmic movement of the hand or of the head during speech has often been prescribed as a means of diverting the patient's attention from his struggling organs of oral articulation, and good might possibly in some cases be done by such a prescription. But I am strongly convinced that the best and most permanent results will always be obtained from a treatment that is based upon an accurate scientific knowledge of the nature of the condition; and it is certain that the chief feature of such a method of treatment will be the attention it devotes to the correction of the lagging action of the vocal mechanism. A thorough course of vocal gymnastics could easily be elaborated; and here again I think there is work for the specialist. A well-educated specialist, who discarded all secret remedies, and devoted himself to the training of his pupils upon scientific principles, would do good work, and would not be without support and encouragement. At the same time, it must be remembered that many patients, especially those who are intelligent and persevering, do not require the aid of a tutor or specialist. If they are made to understand thoroughly the nature of their defect, they can themselves, by dint of persevering and intelligent practice, break their old vicious habits of speech, and acquire the new habit of speaking in a normal way. My own experience has shown me that this is often the case.

As to the performance of surgical operations for the cure of stammering, I shall only say that they should never be had recourse to, under any circumstances. They were tried extensively about the beginning of this century, and there are few more melancholy chapters in the history of Surgery than that which gives an account of them. The reader will find much information upon this subject in Guillaume's article, and in the writings of Kussmaul.

The introduction into the mouth of foreign bodies, such as pebbles and tongue bridles, is equally out of the question.

Demosthenes, with his pebbles, has in this respect given an unfortunate example.

Prognosis of Stammering.

As regards Prognosis, it will be easily understood that the stammerer's progress will depend very largely upon his own intelligent comprehension of the principles which have been above explained. An important factor is also the age of the patient. Perhaps the best age is between twelve and sixteen; when the patient is old enough to realize the importance of getting rid of his defect, and yet not so old as to have the defect rooted very deeply in his organs of speech by force of habit. I think that the stammerer's possession of a good musical ear is also a hopeful factor, seeing that it gives the stammerer a more definite comprehension of tone than he would have without it. Cases with very severe spasmodic complications are generally less satisfactory than those not thus complicated. The habit of Overflow wears, in course of time, easy channels for overflow in the nervous mechanism of articulation; so that very slight surcharge may eventually suffice to produce spasmodic movement of neighbouring muscles. Even in such cases, however, very great improvement may be looked for, if the patient is intelligent and persevering.

When patients are defective in intelligence, or, in a marked degree, defective in self-control, the prognosis can never be so good, and improvement can be looked for only after prolonged treatment under the supervision of an intelligent tutor or specialist, who entirely understands the nature of the defect, and the means that can be employed for its removal.

Rare and Exceptional Varieties of Stammering.

It may now be asked if the foregoing description applies to all cases of stammering; or if, on the other hand, there are not some rare cases which belong to a separate category. The doctrines that have just been explained are substantially, with some variations, the doctrines which have been admitted by the best scientific authors since the days of Arnott. It is interesting to note that Professor J. Müller, writing not many years after the publication of Arnott's conclusions, makes some very pertinent objections to the inclusion of all cases of stammering under this simple category. In his *Physiology*, published about 1840, he remarks, referring to the views of Arnott and Schulthess—"This view is founded on good observations; but, though an improvement on the previous erroneous opinions, it goes further than facts justify. I knew a young man of distinguished mathematical attainments who had formerly stammered very badly, and in pronouncing his own name was apt to say 'Te-Tessot' instead of 'Tessot.'" Thus

Müller's case pronounced the greater part of the first syllable, *including its vowel*, and hesitated only about taking the succeeding consonants. He was therefore unlike a stammerer of the ordinary variety, who would have stuck or stuttered voicelessly on the **T.** I was, some years ago, consulted by a young gentleman who stammered in a similar way. In pronouncing the word "**resident,**" for example, he repeated over and over again the syllable "**rê-rê-rê,**" before he was able to take the succeeding **s**. For a long time I regarded this as a solitary case, in my practice, of stammering due solely to want of promptitude in the *oral* mechanism; but, on examining the patient again quite lately, I found that, whilst the old peculiarity still remained to a certain extent, there was also a distinct difficulty of the ordinary description, best marked during the production of the initial **d**, which was stuck upon because it was pronounced voicelessly. The case must therefore be regarded as one in which the want of promptitude affected both mechanisms, and displayed itself sometimes in the action of the one and sometimes in that of the other. I have not met with any case in which the want of promptitude was confined to the oral mechanism.

Another exceptional variety of stammering, of which I have had experience in at least two cases, is that in which there is merely an Interrupted Utterance, the words being brought out, often hurriedly, in groups, between which are pauses without compressive or other effort in the organs of articulation. A few words are rapidly uttered, and then there is a sudden stop and a pause, whilst the patient is apparently arranging the next group of words in his mind. Then follows the next group of words, then a second pause, and so on to the completion of the sentence. In one well-marked case of this sort, the patient, a medical student, stated that in his boyhood he had suffered from a stammer of the ordinary variety, and that his own efforts to get rid of it had resulted in the development of this curious interrupted utterance, so suggestive of the emptying of a bottle.

A very simple classification of the varieties of stammering would be:—

I. The ordinary variety, in which the vocal mechanism shows want of promptitude.

II. A possible variety, with the want of promptitude in the oral mechanism.

III. A want of promptitude in both mechanisms. This may show itself sometimes in the one mechanism, sometimes in the other; or there may be an Interrupted Utterance, without compressive or other effort, suggestive of a want of promptitude affecting both mechanisms simultaneously and equally, and displaying itself at short intervals in every sentence.

At present, however, I cannot say that the existence of the second and third classes is clearly established. I have had only one case in which there was distinctly a want of promptitude in the Oral mechanism; and in that case, as already explained, it existed alongside of a similar peculiarity in the vocal mechanism. I have therefore thought it better to treat fully of the first great variety, whose peculiarities are clearly pronounced, and to say little about the others, regarding which I have as yet so limited an experience.

My study of this subject was begun some years ago, at a time when I was engaged in lecturing upon those other derangements of speech which are commonly more closely studied by physicians than this. It occurred to me at that time that here was a derangement of speech which, as a rule, was understood but little by professional men, and which was certainly an enigma to myself. I accordingly asked my professional friends to send me as many cases as possible, as I wished to study the matter. Very soon I had accumulated notes of about fifty cases, and the total number of my cases has since that time risen to over one hundred. Studying the matter in the first instance exclusively from nature, I had the usual experience of those who work in this manner, of finding, when I came to look into the literature of the subject, that my chief conclusions had been long anticipated by others; but, being aware that the subject is still but little studied by the profession, I have been encouraged to write this paper in the hope that a plain statement of the facts of the case may render it possible for practitioners to undertake the treatment of stammering. It is a subject of very great importance. So many stammer severely, that it is probably no exaggeration to say that the sum-total of unhappiness inflicted upon a people by this single defect is not much less than that which is produced by all the other derangements of speech put together. At the same time, I am not without hope that the physiological alphabet, apart from its bearing upon stammering, may be of value for educational purposes. I feel assured that children would learn their alphabet more easily, if it were interpreted to them from the beginning on physiological principles. I hope, particularly, that the physiological alphabet may prove to be of value in the education of deaf-mutes.

Further, I hope to undertake, in future papers, the consideration of the other derangements of speech, viz., those which are produced by defective development, and by disease of the nervous system; and I am strongly inclined to believe that the very best method of entering upon the consideration of such a complicated subject, is to begin at the beginning, with the study of the alphabet in the light of physiological analysis.

As I have a sincere admiration for the work that Professor Kussmaul has done in connexion with the Disturbances of Speech, it has been to me a matter of regret that I have not been able to follow him in attaching altogether different meanings to the words "Stammering" and "Stuttering." In this country, the two words are very closely related in meaning, "stammering" being the more general term, and "stuttering" the more specific. All of the derangements of speech described in this paper come naturally enough under the general designation of Stammering, and one of the more common phenomena is fitly enough described as Stuttering. But Professor Kussmaul, following Schulthess, employs the word Stuttering (*Stottern*) as the general term for this whole class of speech derangements; and he applies the word Stammering (*Stammeln*) to certain altogether different derangements of Oral Articulation, which I hope to consider by-and-by when I come to examine the Developmental Disorders of Speech. It would be wresting the English word from its natural meaning, if we used the word Stammering in the same sense as Professor Kussmaul uses the German word *Stammeln*.

In my description of the elements of the Physiological Alphabet, the reader may have been surprised to observe that I have made no use of the terms "Mediæ," "Tenues," "Mutes," "Semi-mutes," "Liquids," etc. These are examples of a very venerable terminology which for ages has clothed the knowledge of these matters, but which, I think, science has now outgrown. The terminology employed in this paper is much more simple, and the terms are more definite and clear in their signification.

APPENDIX.

The following is the Alphabetical Table drawn up by Dr Arnott, and referred to in the text. It may be compared with the Physiological Table of the text.

TABLE OF ARTICULATION.

Mutes.	Semi-mute.	Semi-vowel or Nasal.	Aspirate.	Vocal Aspirate.	Vibratory.	
P	B	M	F	V	*pr*	Labial.
...	...	...	th	th	...	Dental.
T	D	N	S	Z	R	Palatal.
...	L	...	sh	J	...	With the edges of the tongue depressed.
K	G	ng	*ch*	*gh*	*ghr*	Guttural.
		n	H			

There can be little doubt that Arnott would have done even more than he did to solve the whole problem of stammering had the laryngoscope been in use during his day; but he had very false notions about the action of the glottis, and made the radical error of supposing that stammering was always produced by the spasmodic closure of the glottis—a cause of stammering of only secondary importance, since it is comparatively rare. It was reserved for his successors to show that the obstruction was much more frequently at one or other, or at all, of the stop-positions. Otherwise, Arnott's conclusions were thoroughly rational. He taught that the encouragement of the voice was the key to the difficulty; and recommended that, at the beginning of his treatment, the stammerer should maintain the voice as continuously as possible, by interposing the vowel sound "eh" between the words of a sentence; and that subsequently he should enable himself to dispense with this artificial aid, by studying the individual consonant sounds as shown in his table, and by using the voice in their production when voice forms one of their constituent elements.

As regards the literature of the subject, the best works that have come under my notice are:—

(1.) The Treatise of Dr Neil Arnott on *Voice and Speech*, beginning at p. 629 of his work on the *Elements of Physics*, 5th Edition.
(2.) Melville Bell's little work on the *Faults of Speech*.
(3.) Merkel's *Physiologie der menschlichen Sprache*, 1866.
(4.) Kussmaul's great article on the "Disturbances of Speech" in Ziemssen's *Cyclopædia of Medicine*, vol. xiv.
(5.) The very valuable historical article by Guillaume, entitled "Bégaiement," in the *Dictionnaire Encyclop. des Sciences Médicales*.

The reader who is interested in the subject will find a full account of its bibliography in Kussmaul's article. Kussmaul truly remarks that "the literature of this impediment of speech has reached enormous dimensions; every possessor of an establishment for the treatment of stuttering seems to have been impressed with the idea that the interests of suffering humanity necessitated his appearance as an author. Their treatises possess on the average about as much value as the current pamphlets on Balneology."

II.—THE DIAGNOSIS OF EARLY EXTRA-UTERINE GESTATION, WITH ILLUSTRATIVE CASES.

By J. Halliday Croom, M.D., F.R.C.P. Ed., Physician to the Royal Maternity Hospital; Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary; Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh.

(*Read before the Edinburgh Obstetrical Society, 14th January* 1891.)

Though the difficulties surrounding the accurate diagnosis of early extra-uterine pregnancy are numerous and for the most part well recognised, yet it is at once curious and disappointing to find such a variance of opinion. For instance, Tait virtually says that it cannot be made until after rupture; and although this is too general and dogmatic, yet it is, so far as my experience goes, in the main true. Nevertheless Aveling asserts "that it has so many prominent and characteristic symptoms that its detection is more easy then than that of an ordinary pregnancy in the early months." Barnes maintains that the diagnosis of tubal pregnancy may with ease be made about the seventh or eighth week.

It would serve no good purpose to recapitulate all, or even a selection of the opinions that have been advanced as to the probability or certainty of diagnosis of early extra-uterine fœtation. It seems to me that, in offering any remarks on the subject, they should be based on personal experience and by the record of actual cases.

First of all, What are the definite signs or symptoms to which authors attach importance in the diagnosis of the condition? and, second, what the value of the signs in cases which have come under my own observation?

Now, with regard to the signs and symptoms of extra-uterine gestation in the early months. They may be arranged thus. I do not at all mean to say that this is the most satisfactory classification, but it includes the various signs alluded to, and at the same time indicates the value of each.

a. The general and reflex symptoms of pregnancy, especially if the pregnancy has occurred after a considerable period of sterility. *b.* Disordered menstruation, especially metrorrhagia, coincident with symptoms of pregnancy; gushes of blood, accompanied by severe pelvic pains. *c.* Severe pains in the pelvis; attacks of pelvic pain, followed by tenderness in either iliac region, and other symptoms of pelvic inflammation. *d.* The existence of a tumour: this tumour presenting the characteristics of a tense cyst, sensitive to touch, actively pulsating; steady and regular growth of the tumour. *e.* The os uteri patulous, the uterus displaced and empty. *f.* Paroxysms of severe and spasmodic pain in the pelvis, with general symptoms of collapse. *g.* Expulsion of the decidua in whole or in part.

Such is a short synopsis of the signs and symptoms gathered from various sources; and a record of cases which have come under my own observation will form a sufficient commentary upon their individual or collective value.

Case I.—Was under the charge of Dr Byrom Bramwell and Dr Duddingston Wilson.

She was a multipara of 32, who had borne two children, the youngest six years old. She had missed one menstrual period, and her second was due on Christmas Eve. I saw her on Christmas Day 1888. The night previous she had been seized with acute pelvic pain, localized to the right side. So violent was the pain that Dr Wilson had to keep her under opium the whole night. It was accompanied by slight uterine discharge, which had been occasional in the preceding two months. The following day she showed marked symptoms of abdominal hæmorrhage and collapse, and Dr Bramwell was called in. In the afternoon I saw her, and was asked to decide as to extra-uterine fœtation. I found her collapsed, the abdomen distended and evidently filled with blood. Per vaginam the uterus was soft and slightly enlarged; there was an indistinct, though perceptible, fulness in the right lateral fornix. The question was pressing—Was it a ruptured tubal pregnancy or a hæmatocele? I confess that the menstrual suppression, the long interval between the last pregnancy, and the sudden and acute symptoms of collapse, along with the conditions found per vaginam, decided me in favour of an ectopic gestation.

I opened the abdomen, therefore, and found it filled with fresh blood and enormous clots. These I cleared out partially, and then went direct to the pelvis and examined both uterine appendages. Both of these I brought to the surface, examined, and removed; and though I found the ovaries enlarged and cystic, yet there was no evidence of any gestation sac. I was unable to find the source of hæmorrhage anywhere, and being unwilling to further jeopardize the patient, I closed the abdomen. The hæmorrhage continued, however, unabated, and the patient died the following day. No post-mortem examination was permitted, therefore I am unable to say whence the hæmorrhage actually came; but it is enough for the purpose of the present communication to point out that my diagnosis was not borne out by the result.

On looking back on such a case, I cannot see that I could have arrived at any conclusion other than that I did. The menstrual suppression, the acute pain coming in paroxysms accompanied by hæmorrhage, the softness and enlargement of the uterus, all pointed, it seems to me, conclusively in this direction; and yet the abdominal section, whatever may have been the cause of the hæmorrhage, showed that pregnancy, either intra-uterine or ectopic, did not exist.

Although rupture usually takes place later on in tubal pregnancy, it is by no means infrequent at the seventh or eighth week. I cannot suggest what means there are at our disposal to arrive at any conclusion other than the one I was forced to, except that there was no history of passage of decidua or shreds; and I fear that, under similar circumstances, I should be disposed to do again as I did, though with a feeling both of doubt and misgiving.

I do not know that the opening of the abdomen hastened the patient's death, but it certainly proved the utter insufficiency of acting on the generally recognised signs and symptoms of extra-uterine pregnancy. The case was to me more a warning than a lesson, and does not by any means add to our satisfaction in operating.

Case II.—Mrs M., married, one child four years previously, was brought to Ward 28, suffering from irregular hæmorrhages. These hæmorrhages had been going on for six weeks, previous to which her menses had been suppressed for two months. She complained of constant pain in the right side. The pain was spasmodic in character.

On examining over the pelvis a distinct fulness could be felt in the right side, elastic and tender. On auscultating, a very well-marked bruit could be distinguished all over the surface. Per vaginam the uterus could be felt pushed over towards the left side and backwards, somewhat enlarged, and the os patulous. Occupying the whole of the right roof of the vagina was a soft pulsating mass, irregular in shape, and very tender to touch. Bimanually, the mass seemed about the size of a cocoa-nut, and the uterus felt slightly enlarged. During her continuance in Hospital for a week the tumour seemed to increase in size, and the pulsations in it were not only felt repeatedly per vaginam, but could be seen and recognised on the abdominal wall. During the week she was under observation the bruit became distinctly louder. She had occasional slight hæmorrhages, but no shreds of decidua passed, nor was she able to give any record of having passed any shreds previous to admittance.

The diagnosis forced upon me was an extra-uterine pregnancy between the twelfth and fifteenth week; and I think that the physical conditions justified the diagnosis. The souffle to which so much importance has been attached was present. The pulsating, rapidly growing extra-uterine tumour was present. The menstrual suppression and subsequent hæmorrhages were present; and although I did not get a record of or find any decidua present, yet the woman's statements with regard to the blood and clots which passed made it more than likely that some shreds had escaped. Here, then, it seemed to me at last I had fallen across a well-marked extra-uterine pregnancy. I accordingly opened the abdomen, and came down upon a large dark mass lying in the right side of the pelvis. It was soft and entirely fixed in every direction. All this exactly corresponded with what one expects in extra-uterine pregnancy. I proceeded to separate the adhesions carefully, and succeeded in freeing the mass after very considerable trouble.

I drew it to the surface, and just as it reached the surface of the abdominal wound it ruptured, and a considerable quantity of blood escaped over the abdomen. I ligatured the pedicle and removed it, still believing that I was dealing with an extra-uterine pregnancy. It was carefully examined at the College of Physicians' Laboratory by Dr Woodhead and others.

No trace of pregnancy whatever could be found in the sac, and the tumour was found to be a huge distension of the tube with blood, or, in other words, a hæmato-salpinx. It seems to me that the only point in the case which failed to substantiate extra-uterine pregnancy was the absence of decidua. Every other symptom was present. Of course this may have been an early extra-uterine pregnancy in which the ovum had been absorbed; but there was no trace either of chorion or decidua.

I do not discuss this point, I only mean to say that the ordinary physical characteristics of pregnancy were wanting in the sac.

Case III.—On the 25th of November 1890, I was asked to see M. R., who gave me the following history:—On the 26th of November 1889 she was confined of a second child easily, and made a good recovery. Menstruation returned about the third month. On the 21st of August 1890 she had a miscarriage, apparently about eight weeks. On the 22nd of September following, her menstrual period occurred, apparently normal. There was no menstrual discharge in October. On November 1st there was a quasi-menstrual discharge, which was thought to be menstruation, but it disappeared in a few hours. There was frequent recurrence of this discharge throughout the month of November, coming on in the morning and disappearing in the afternoon. On the 26th of November I saw the case. There was a distinct swelling on the right side of the uterus. On the 28th an entire decidual cast of the uterus came away; slight pains were complained of. The decidua was examined very carefully, said to be complete, and considered of six weeks' formation. No ovum, however, was found. On November 29th the patient was seized about 6 P.M. with violent pains in the region of the stomach and right iliac fossa. These lasted about half an hour in a very severe form; then they abated. I saw her shortly after this, and found the swelling larger and more tender.

On December 1st the severe pains in the stomach and iliac region returned. Relief was obtained by a large opiate. Coloured discharge continued to come at intervals. On December 12th I saw the patient after she had severe pain; there was a distinct swelling behind the uterus, continuous with a swelling on the right side. There was pain and discomfort in passing water. The question which all along had been present to my mind was that of extra-uterine pregnancy.

From the fact of the entire escape of the decidua, which so far as my reading goes is exceptional in cases of ectopic gestation, I was disposed to think that the ovum had escaped, and that the pregnancy was intra-uterine, and that the swelling might be a hæmatocele. Still the paroxysmal pain on the right side and the slight enlargement of the swelling continued, and therefore I kept a strict watch on the patient. Gradually, little by little, the tumour on the right side became more cystic, more tender, and more elastic to touch. Hæmorrhage continued from time to time from the uterus, and well-marked paroxysmal pain was present every four-and-twenty hours. I did not use the vaginal stethoscope. No auscultatory sounds could be heard through the abdomen, but the enlargement of the right side tumour, gradual and definite, was a sufficiently characteristic symptom, and that, superadded to the passage of the decidua and the enlargement of the uterus, led me to the conclusion that the patient was suffering from an early extra-uterine gestation.

The local examination was conducted with the utmost care, and the uterus, enlarged and heavy, was found shifted to the left lateral and posterior side of the pelvis. The cystic mass which I have just described occupied the right side. The mass felt particularly tense and elastic, and gave the impression of being about double the size of a large orange. It was very tender and painful to the touch.

On the 26th of December, having decided that the case was one of extra-uterine pregnancy, the further interference was readily enough settled. Of course, any treatment other than that by abdominal section was not entertained. I therefore opened the abdomen on the 26th of last December, and came on a firm resistent mass in the right side. It was firmly adherent in every direction. The great difficulty was to find a place to commence the work of separation and removal. I was surprised to find the mass so fixed and so solid. From my previous examination per vaginam I expected to find it elastic and fluid, and much more mobile.

I began by ligaturing the proximal end of the tube, and after freeing the adhesions and separating the broad ligament and peritoneum, I ligatured the distal end and the broad ligament below and so removed the mass. I left in a drainage-tube for some hours. The patient made an uninterrupted recovery. The microscopic examination must be reserved for another communication. It proved to be an extra-uterine pregnancy about the eighth week.

This case proves beyond question the possibility of deciding the presence of an extra-uterine fœtation, and removing it successfully before rupture, provided only pains and care be taken in watching the symptoms as they develop.

"Any man who gives an opinion that he diagnosed a tubal pregnancy merely upon the unaided discrimination of symptoms or the dim light of a pelvic examination, I regard with so much suspicion that I do not accept his evidence for argument save under exceptional circumstances."

Such is Tait's opinion. It is certainly not wanting in strength.

Now, the record of these three cases shows very plainly the difficulties which surround the diagnosis of extra-uterine pregnancy, not only before but after rupture; but the case which I describe last goes far to show that, with careful watching, a case of early extra-uterine pregnancy can be diagnosed with a very considerable amount of certainty.

Certainly there is no one symptom or sign such as in ordinary pregnancy which is pathognomonic; and more than that, there seems to be no one symptom or sign which is even of greater value than another; but upon the following four grounds, if seen early and watched carefully, a diagnosis can be made with a very great amount of precision.

1*st*, The general signs of pregnancy—for example, the cessation of the menses.

2*nd*, The displacement of the uterus to one side by a tumour which gradually grows.

3*rd*, The passage of the decidua in whole or in part, and irregular hæmorrhages.

4*th*, The presence of paroxysmal pain localized to one side though not to one spot. All those conditions must be present, but my cases seem to show that the essential point is passage of the decidua.

In the first two cases this did not occur, and that was the weak point in the diagnosis; in my third case, where the diagnosis was made accurately, the passage of the decidua and the subsequent rapid growth of the lateral tumour placed the nature of the case to my mind beyond dispute. Indeed, these three cases would seem to show the converse of what Mr Tait insists on. He seems to imply that extra-uterine pregnancy can only be diagnosed after the rupture of the gestation; but it would seem to me that there is more difficulty in recognising the condition then with exactitude than in forming a conclusion after careful watching as to the presence of an extra-uterine pregnancy before rupture.

The whole question turns upon the point—whether the case is seen sufficiently early to admit of careful examination of it being made at intervals before a definite conclusion is arrived at.

I have avoided in the present communication to speak of operation; but there is this much comfort, that whatever the nature of the tumour may happen to be, so long as the uterus can be carefully excluded the sooner the tumour is removed the better.

CASE IV.—The fourth case was sent to me by Dr Doig of Galashiels in June last, and diagnosed by him as an early extra-uterine pregnancy. The patient was a young married lady. She had missed two periods, and had irregular hæmorrhages accompanied by paroxysmal pain. On the right side she had a soft elastic swelling. The uterus was pushed over to the left side, and was soft and enlarged. She passed an entire decidual membrane after coming under my care. With the assistance of Dr Doig I opened her abdomen and removed an extra-uterine tubal pregnancy about the third month. She made an excellent recovery, though a sinus remained for some time afterwards.

This case entirely bears out the conclusions arrived at in regard to the former cases. The microscopic appearances of this and the previous case I have retained for another communication.

III.—NOTE ON A PORTABLE INFANT-WEIGHER.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women, and on Diseases of Infancy and Childhood, School of Medicine, Edinburgh; Physician for Diseases of Women, Western Dispensary, Edinburgh.

(*Read before the Edinburgh Obstetrical Society*, 8*th July* 1891.)

It is generally conceded that the infant-weigher is of considerable value as an aid to the diagnosis of disease in early life, and that it affords a means of forecasting with some degree of accuracy the probable course of the malady. The value of the infant-weigher, both in the sphere of diagnosis and in that of prognosis, has, however, been lessened by the fact that it has been found difficult of application in private practice. It is comparatively easy in a large hospital to carry out weighing observations regularly and continuously, and to gather from them much valuable information as to increase or decrease in body-weight; but in private, and even in dispensary practice it has been found next to impossible to obtain such a series of observations as should warrant the medical man in drawing deductions therefrom as to the health of the patients. The chief reason why it has been found difficult to carry out weighing observations in every-day practice is discovered in the circumstance that the instrument used for the purpose has generally been too heavy or too bulky to permit of its easy conveyance from one house to another, and it has often been felt that a portable, and at the same time accurate infant-weigher was a desideratum. It is my wish to draw the attention of the Fellows of this Society to the portable instrument which I have found of great service both in dispensary and private practice. This instrument, the baby-weigher of Sutils (*vide* Figs. 1 and 2), is of comparatively small size, can be easily fitted up in any room in a few minutes, and permits of the rapid performance of the operation of weighing. Its action is little interfered with by the struggles of the infant, its use is very rarely objected to by the mother, and, what is of the greatest importance in private practice, the instrument is portable. When fitted into its case the weigher with all the accessories for suspending it is not much larger than a policeman's baton, which in outward appearance it closely resembles. It is supplied with a strong spiral spring which is drawn out by the weight of the infant, and the result marked by the index on the scale. On one side of this scale are figures representing the age of the infant in months, and on the other side is inscribed the normal weight of the infant (in kilogrammes) at each month; so that, by this arrangement, it can be seen at once whether there is any deviation from the normal standard of health or not.

The mode of employment is very simple. The instrument having been suspended from a nail or cupboard handle, or from the support supplied with it, the infant is divested of his clothes,

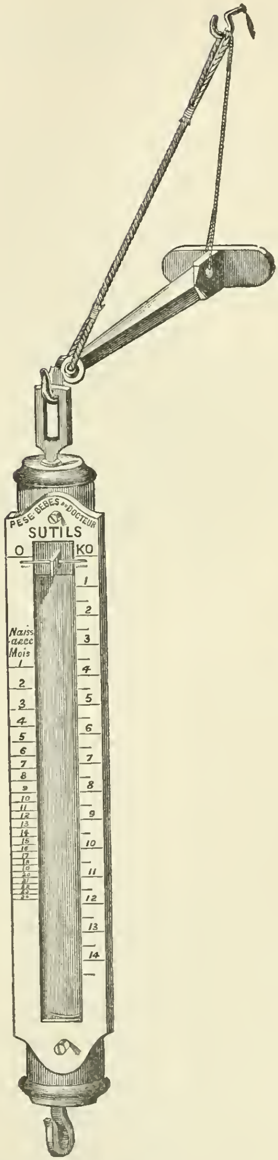


FIG. 1.—Sutils' Infant-weigher.

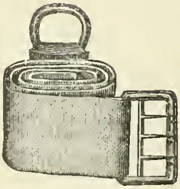


FIG. 2.—Band for suspending Infant from Weigher.

the band is fastened round his body below the armpits, the ring in the band made fast to the hook attached to the lower end of the weigher, and the child allowed for a moment or two to swing unsupported by the mother or nurse. The position of the index in the scale is then ascertained and compared with the normal weight for the age at which the infant has arrived. If the weight of the child at birth is known the result will be especially valuable. If the weight of the infant's clothing be known it will not be necessary to undress the child, and in this way time is saved, and the chilling effect of the air avoided. This instrument may be safely used for all infants of less than three or four years of age.

The weight of the infant ought to be ascertained, as far as possible, at regular intervals of time and under similar circumstances. If the child has recently emptied the bladder and rectum a difference of a few ounces in the total body-weight will be the result. The weighings may be carried out daily, or weekly, or monthly. When it is simply desired to ascertain whether or not a healthy infant is gaining weight regularly, a weighing once a month may be sufficient; but when it is wished to form a diagnosis or prognosis in the case of an infant who is ill, daily, or at any rate weekly observations must be made.

I have found that the regular weighing of infants at such times as those of dentition or weaning has a great value as regards both the diagnosis and prognosis of any pathological states. Again, it may be sufficient to weigh the baby in order to form an opinion for or against the use of a certain kind of artificial food; or, in other cases, the weight of the infant may afford an indication of some deep-seated constitutional malady, such as syphilis or rickets, which is powerfully influencing the development of the infant. In the case of infants nursed by the mother or by a wet-nurse the effect upon the growth in weight caused by the change in character of the milk due to the occurrence of pregnancy or the reappearance of the menses may be noted by the infant-weigher. Sutils (*Guide pratique des Pesages*) gives some interesting and convincing instances of the above-mentioned facts. This author also emphasizes the special value of the infant-weigher as a check upon the treatment of children who are sent out to nurse in crèches and similar institutions.

It is often very important for the medical man to be able to ascertain whether or not a medicine which he is administering to a sick infant is producing a good effect, and he will find in the infant-weigher a ready means of settling this question with some degree of exactness. In the case of an infant who may be suffering from some wasting malady, and whose weight has been stationary or decreasing, the administration of such drugs as cod-liver oil and chemical food will often produce a marked improvement, the first sign of which is found in an appreciable gain in weight. There is thus supplied to the practitioner a proof that his treatment is founded on correct principles, and his diagnosis is confirmed. In other cases the medicines may produce no increase in weight, and then it is probable that they are not suited to the special case: the physician is thus led to reconsider his diagnosis and to devise some other means of treatment.

The use of weighing instruments has been of great value in enabling physiologists to determine the normal rate of increase in infancy and childhood; but whilst this rate has been very accurately determined for infants during the first six or eight weeks of life and for children over four years of age, there is still need for further investigations as to the growth between the ages of two months and three or four years. There is a natural loss in weight during the first two or three days of life, to the extent of about 6 per cent. of the body-weight. The original birth-weight (about 3000 grammes, or 7½ lbs.) is regained on the fourth or fifth day, and thereafter there is a steady increase, interfered with only by pathological conditions in the infant himself or in the milk of his mother or wet nurse. During the first year of life growth in weight is rapid; it is, as a rule, doubled by the end of the fifth month, and trebled by the end of the twelve months. Auvard (*Le Nouveau-né*, 1890, p. 18) has divided the first year into four periods of three months, and has found that in the first trimester the daily gain is 25 grammes, during the second trimester 20 grammes, during the third 15 grammes, and during the fourth period of three months only 10 grammes. Although these figures may not be found in all cases, they are yet sufficiently accurate to be of use in practice. Increase in weight is not so rapid in the second year of life; whilst in the first twelve months about fifteen pounds are added to the birth-weight, in the second year there is only an addition of five pounds. During the next six years the annual gain is about four pounds.

A knowledge of the normal rate of increase in weight is essential in order to enable us to detect the deviations that occur; but when we are in possession of the standard rate of growth, then the infant-weigher affords us a ready method of diagnosing irregularities and of judging of the effect of medicines upon the process of assimilation and increase in body-weight.

IV.—CYSTOSCOPY: NOTES FROM AN EXPERIENCE OF UPWARDS OF FIFTY CASES.

By David Wallace, M.B., F.R.C.S. Ed., M.R.C.S. Eng.

(*Read before the Medico-Chirurgical Society of Edinburgh, 8th July* 1891.)

Mr President and Gentlemen,—In December 1889 I had the honour to read at this Society a paper on the cystoscope.[1] I then described the history and mechanism of the instrument, and illustrated its use by reference to several cases of genito-urinary disease which I had examined cystoscopically. To-night I desire to make some remarks from an experience of upwards of fifty cases,—fifty-four in all,—and to describe in detail two or three which seem to me to be both interesting and instructive.

---

[1] *Transactions of the Edinburgh Medico-Chirurgical Society*, vol. ix. 1889-90.

If I leave out of consideration certain cases in which, from one cause or another, the examination was unsatisfactory, owing to the presence of enlarged prostate preventing depression and other movements of the instrument within the bladder; and if I also omit those cases in which nothing more could be discovered by cystoscopic examination than by the other means adopted to account for the patient's symptoms, I find that I have to deal with forty-five cases in which cystoscopic examination was of distinct value. These forty-five cases included fourteen cases of tumour, five of calculi, five of tubercular ulceration, eight of cystitis, and five of kidney disease. The other eight cases cannot be classified under the above headings.[1]

The tumours, fourteen in number, varied in their character. In twelve operative interference was had recourse to, and of these five were papillomata, one a leio-myoma, and eight villous cancers. In the other two no operative interference was attempted. Four of these cases very vividly exemplify the diagnostic power of the cystoscope in obscure genito-urinary disease, and I therefore propose to give an account of them.

CASE I.—J. A., male, æt. 60, under the care of Mr Duncan, complained of *hæmaturia* of some weeks' duration. The urine was very dark and contained much blood, some of which was passed in the form of large irregular clots. The clots were passed during the flow of the urine. No symptoms of the presence of stone or kidney mischief. On sounding nothing was felt. Microscopically epithelial squames were seen, but no cancer cells recognisable as such.

Diagnosis uncertain, but hæmaturia, probably vesical or prostatic in origin.

Cystoscopic Examination.—The bladder washed out, and six ounces of boric lotion injected. The bladder wall not rugose. On left infero-posterior part of bladder above the left ureter an irregular villous tumour seen. The tumour had a narrow base of attachment, and projected into the bladder for about an inch and a half. There was some extravasated blood on its surface. In this case a second examination was made, when the appearance above noted was again satisfactorily observed.

Diagnosis.—A pedunculated villous tumour about the size of the terminal phalanx of thumb.

In this case suprapubic cystotomy was performed by Mr Duncan.

---

[1] In these eight cases there were three of enlarged middle lobe of the prostate, and two of ulceration of the bladder wall.

He found the tumour in position and character similar to the idea derived cystoscopically, and was able to remove it, with the best possible result.

CASE II.—Wm. D., male, æt. 30, under Prof. Chiene's care. Gave history of *intermittent hæmaturia* of several months' duration. No evidence of an abnormal vesical condition could be gained on thorough investigation by sounding, although there was apparently some roughness on the floor of the bladder. Microscopical examination of the urine gave no evidence of tumour growth.

Cystoscopic Examination.—Eight ounces of fluid injected. On the floor of the bladder an irregular blood-clot of some size was seen. Laterally the bladder quite healthy in appearance; but a round, smooth, non-pedunculated swelling the size of a walnut was discovered in the middle line of the wall anteriorly.

Diagnosis.—A smooth sessile tumour situated on anterior aspect of bladder wall.

Prof. Chiene performed suprapubic cystotomy. The incision to open into the bladder in the middle line, passed into the tumour, so that another incision had to be made a little to one side. When the bladder was opened into, a portion of the tumour was found under the mucous membrane, but not projecting into the cavity, while the portion seen cystoscopically was found to be as described on cystoscopic examination. The tumour was easily shelled out and removed. On microscopical examination it proved to be a leio-myoma, one of the rarer forms of bladder tumour.[1] The patient made an excellent recovery.

It is interesting in this case to note that even after the presence and exact position of the tumour was seen, it could not be felt with the sound or bimanually, *i.e.*, with one finger in the rectum and the other hand above the pubis.

CASE III.—Mrs G., æt. 64, under the care of Dr Barbour. Gave history of *intermittent hæmaturia*, *frequency of micturition*, and *dysuria*. The two last symptoms were of one year's duration. On bimanual examination a soft swelling could be felt between anterior fornix and abdominal hand, situated a little to the left of the middle line. Microscopic examination of the urine gave no evidence of a neoplasm.

Cystoscopic Examination.—Eight ounces of lotion injected. The bladder as a whole healthy, but on the right inferior aspect, just at position of the right ureteral opening, a villous tumour seen. Base of attachment as broad as tumour surface, but the tumour projected into the bladder for about one inch. The tumour obscured the right ureteral opening, but the left could be seen as a narrow fissure.

Diagnosis.—A sessile villous tumour about the size of the terminal phalanx of the thumb.

Dr Barbour afterwards dilated the patient's urethra, and made a digital examination verifying the position, size, and attachment of the neoplasm. He found, however, that it infiltrated the bladder wall to such an extent that operative interference seemed inadvisable. A small portion of the tumour which he removed was found microscopically to be carcinomatous.

---

[1] Billroth, *Surgical Pathology.*

CASE IV.—J. H., male, æt. 53, under the care of Dr Robert Stewart. Gave history of *intermittent hæmaturia* of three or four years' duration. The condition was not benefited by treatment, and occasionally the bleeding was alarmingly profuse. The bladder had not been sounded, but masses of membrane passed per urethram were found to consist in part of epithelial cells.

Cystoscopic Examination.—Eight ounces of fluid injected. A perfect view of the whole bladder was obtained, when it was seen anteriorly and laterally to be smooth and healthy, although paler than usual. (He had a week or two previously had very profuse and alarming bleeding.) From the floor of the bladder there projected a well-marked and extensive villous tumour. The tumour consisted of numerous long wavy fimbriæ, which were very vascular. The bloodvessels in the villi were distinctly visible. The tumour was sessile, attached to the floor of the bladder, close to its neck, for about half of its circumference, but the mass of it was a little to the right.

Diagnosis.—A sessile villous tumour.

In this case supra-pubic cystotomy was performed by Prof. Chiene and the tumour removed. Its attachment and character were as described cystoscopically. It was found on microscopical examination to be carcinomatous, but probably an example of a tumour originally benign which had become malignant.

The above four cases of vesical neoplasm are very typical examples of what I have found in the thirteen cases which I have had the opportunity to observe. Cases I. and II. show very markedly that, even by the most careful local examination in the hands of the most experienced surgeons, no evidence whatever can be obtained of the presence of a neoplasm in some cases of hæmaturia. Accordingly, to diagnose with certainty the presence of a tumour growth it is necessary either to examine the bladder cystoscopically or to have recourse to digital exploration; and when considering the latter, the surgeon must face the difficulty that frequently hæmaturia is due to tubercular ulceration of the bladder or disease of the kidney, so that unless these be excluded by other evidence, the operation of cystotomy may have been deemed necessary for diagnostic purposes when cystoscopic examination would have sufficed.

These cases further show, I think, that accurate diagnosis may be made by the cystoscope—accuracy which cannot be otherwise arrived at by any other examination short of digital exploration after cystotomy. Again, if the examination with the cystoscope fails to be satisfactory, and the condition causing the symptoms be not determined, cystotomy can always be resorted to.

Calculi.—It is admitted that the detection of a calculus by the sound may be rendered difficult in various ways, as, for example, by the lodgment of the calculus in a sulcus or sac of the bladder, or when the stone is small in a depression between rugæ, or by a fold of mucous membrane partly covering it. That such difficulties exist is shown by the various modifications of the sound introduced with the object of aiding the detection of calculi. Only a month or two ago a new sound, introduced by Sir Henry Thompson, to enable a small calculus to be more easily detected, was figured in the *British Medical Journal.* Cases have been recently quoted by two surgeons of encysted calculi missed by the sound, but detected by the cystoscope. I have not been fortunate enough to have such a case, but I have had two cases in which, after very careful examination, the surgeon having failed to detect the presence of stone, I was able to demonstrate its presence by the cystoscope.

Case V.—J. B., male, æt. 65. Patient stated that he had passed many small stones. History of present illness as follows:—Had suffered for last few weeks from severe pain in the loin. A few days before examination the pain came on suddenly and passed away suddenly, but was very severe while it lasted. He had not recently passed any calculi by the urethra, but complained of the various symptoms which point to the presence of a stone in the bladder. After very careful examination by sounding, no stone was detected. A lithotrite was not used.

Cystoscopic Examination.—Six ounces of fluid injected. The bladder wall was healthy in appearance, and not rugose. An elongated, almond-like body, dark in colour and tuberculated, was seen on the floor of the bladder. It moved when the patient shifted his position, and on directing the beak of the cystoscope so as to touch it, it was readily proved to be a calculus.

Diagnosis.—A stone about the size of a horse-bean, probably uric acid in composition. The stone was afterwards removed.

The fact is, patients who suffer from calculi come before the surgeon nowadays at a very early period after symptoms of the presence of a stone have been manifested,—so soon, indeed, that not many months ago a discussion was raised by two eminent surgeons when a concretion should be dignified by the term calculus or stone, the one fixing the limit at three or four grains, the other at twenty. In rugose bladders there is the risk of such small calculi getting into rugous depressions and being missed on sounding. With the cystoscope, when carefully used, the detection of such small stones is more probable; and accordingly, in cases of suspected stone, where sounding proves negative, I think cystoscopy should be had recourse to.

Tubercular Ulceration.—A patient who suffers from hæmaturia accompanied by pyuria may be the subject of different forms of genito-urinary disease which have to be differentiated from each other; and although the history, presence of tubercular bacilli, and the symptoms from which the patient suffers, may cause the diagnosis to be almost certainly tubercular, it is nevertheless very difficult in some cases to localize the disease. Is the condition entirely prostatic, or is it vesical, or renal, or a combination of any two or all three? In a paper[1] read before this Society by Dr R. W. Philip, the author points out that there may be a comparative absence of symptoms at the outset of tubercular affection of the genito-urinary system, and further, that even in the presence of a grave bladder lesion there may be persistent absence of cystitis, or even discomfort in micturition. He also refers to the difficulty of detecting tubercle bacilli in the membranes passed per urethram. The two following cases exemplify what important help may be derived from cystoscopic examination where the case is doubtful.

Case VI.—Miss F., æt. 24. Recommended to me by Dr James Ritchie. The patient, a robust, healthy-looking woman, complained of hæmaturia and pain in the loins and bladder. Pain was first felt in the bladder four years earlier, but at that time there was no bleeding. She observed blood in the urine for the first time two months before I examined her. She had pain during and after micturition. There was great frequency, both during the night and day. Microscopically blood and pus in the urine, no crystals nor cells. Tubercle bacilli looked for, but not observed. There was a very decided family history of tubercular disease.

Cystoscopic Examination.—Six ounces of fluid injected. The greater part of the bladder wall healthy in appearance, but a regular, shallow, dark-coloured area, rather larger than a sixpence, seen just above the right ureter.

Diagnosis.—An ulcer, probably, from history, tubercular.

Under local and general treatment the patient got completely better.

Case VII.—T. B., male, æt. 37, under care of Prof. Greenfield. Patient had a perinephritic abscess on left side, which burst into the pleura, from thence opened into a bronchus, and was thus discharged. Prostate completely destroyed by tubercular disease. When examined the patient had pain over the left kidney and suffered from frequency of micturition. Urine contained pus and blood—pus in large amount.

Cystoscopic examination made, after injection of six ounces of fluid, with much difficulty, but pus was observed with great distinctness to be passed from the left ureteral opening. Nothing further could be made out, owing to restlessness of the patient.

---

[1] R. W. Philip, "Case of Tubercular Ulceration of Bladder," *Trans. Edin. Med. Chir.*, vol. viii., 1888-89.

In Case VI. it was difficult to say, before cystoscopic examination, whether the condition was vesical or renal, but I think the examination showed definitely that the condition was vesical, and the after history may be said to have proved it to be so. Case VII. is of great interest, as it shows that you can see pus passing from the ureteral opening, and when taken together with the next case (Case VIII.) indicates how important cystoscopic examination may be in doubtful cases of pyuria or hæmaturia.

CASE VIII.—A. B., male, æt. 37, under care of Prof. Fraser. Gave history of *intermittent hæmaturia.* Microscopically no tumour cells found in the urine. The patient attributed his condition to an injury to the loins sustained by him some months previously.

Cystoscopic Examination.—Eight ounces of fluid injected into the bladder, which was not rugose nor unduly injected. No abnormality of the bladder observed, but while clear urine was seen to be ejected from the right ureteral opening, a brownish red fluid issued from the left and gradually diffused through the contents of the bladder.

Diagnosis.—Blood from the left kidney the cause of the blood in the urine. The bladder is healthy, and from cystoscopic examination there is no reason to suspect any disease of the right kidney.

It is a fact that by cystoscopic examination urine, blood, or pus can be distinguished passing from the ureteral opening or openings, and in cases where you find the bladder healthy, and see blood or pus ejected from one or both openings, you have distinct evidence that there is disease of the kidney or kidneys. In obscure cases, therefore, we may be able to decide that one or both kidneys is diseased, and, acting on the knowledge thus gained, can attack the diseased organ. Such knowledge is of much value in considering the operation of nephrectomy. It is on record that a nephrectomy has been performed when the kidney removed was the only one present; but, apart from such a rare occurrence as that, we must recognise that a favourable result after nephrectomy greatly depends on the condition of the kidney which is left. Is it in a condition to take on the extra work thrown upon it by the removal of the other? or is it so diseased that it is unable to perform more than its own share of the work? This point may have some light thrown upon it by cystoscopy; for by cystoscopic examination you would at least be able to judge, by observing what passed from the ureters, whether the kidney intended to remain was likely to be functionally active.

Now let me pass, first, to a consideration of the points to be attended to for satisfactory cystoscopic examination; and, second, to a short *résumé* of the value of the instrument. The points to attend to in the use of the instrument are very simple, but I may very shortly refer to some of these, which are of most importance to enable us to gain a satisfactory result.[1]

1. Precautions should be taken to avoid the risk of a chill to the patient, just as in any other examination of the bladder.

2. The urethra must have a calibre sufficient not merely to allow the introduction of the instrument, but also to admit of free movement of the instrument within the bladder.

3. It is imperative that the bladder should contain at least six ounces of clear fluid, and that the patient, unless he be able to bear the introduction of the fluid and movement of the instrument without pain, be either locally or generally anæsthetised. I have examined most of my cases without any anæsthetic, and in the majority I have found that the examination caused little or no pain. I think the chief indication for an anæsthetic, local or general, is to be derived from the quantity of urine which the patient can comfortably retain. If he is able to retain eight ounces without discomfort, no anæsthetic is, as a rule, required; but, on the other hand, if the patient be very nervous, it is better even in such circumstances to administer an anæsthetic.

4. The examination must be methodically and carefully made, so that the whole of the interior of the bladder may be thoroughly investigated. In connexion with the time required for the examination, it is interesting to note that the superficial area to be examined in a bladder which contains eight ounces of fluid is as follows—When the bladder is ovoid, 30 sq. inches; when the bladder is spherical, 27·27 sq. inches. The field of the cystoscope is about half a square inch. I prefer to use the "Anterior" instrument, as its sphere of usefulness is much greater than that of the posterior. The whole bladder wall may be examined by the "Anterior," except a small part opposite the opening of the urethra into the bladder; for the examination of it the posterior instrument is required.

5. Most affections of the bladder are situated in the inferior third, and it is to that part, therefore, that particular attention should be directed. In every case the urethral openings should be carefully observed. We must not forget, however, that not only may there be ulceration of the roof of the bladder, as in Dr Philip's case, already referred to in this paper[2]; but, as in Case II., which I have related, tumour growths may spring from the anterior aspect. The ureters, unless obscured by tumour growth, can, as a rule, be easily brought into view; and when the contained fluid of the bladder is clear, it is not difficult to see the urine being

---

[1] In my previous paper (*op. cit.*) I pointed out how a cystoscopic examination should be made, but I wish to draw particular attention to the points now taken up.

[2] V. *op. cit.*

ejected from their orifices.[1] Cases VII. and VIII. exemplify very beautifully how pathological conditions may in this way be observed.

6. When an abnormality has been discovered, the observer requires to move the beak of the instrument into different positions to determine exactly what he sees. I can illustrate the value of this by reference to two errors in diagnosis which I have made. The first was a case in which I readily found a calculus, but was deceived regarding its size,—I thought it larger than it turned out to be. To have gauged the size correctly all that was necessary was to approach or recede from the stone until its surface was most distinctly seen. At the time when I got the clearest definition, I would have determined the actual size. In the second case, the patient had repeatedly passed gravel, and gave a very distinct history of stone symptoms. Professor Chiene failed to detect any stone or other abnormality by careful sounding. I examined the patient cystoscopically, and on the floor of the bladder a little to the right of the middle line readily distinguished an irregular body about the size of a Barcelona nut. I described the condition as follows:—To the right of the middle line on the floor of the bladder there is a grayish-white tuberculated body about the size of a Barcelona nut. *Diagnosis*—A calculus, probably formed of oxalate of lime coated with phosphates. The examination pained the patient considerably, and I was so satisfied of the diagnosis that I merely held the instrument in the same position to allow two or three medical men who were present to see the calculus. A few days afterwards the patient was put under chloroform, the urethra was dilated, and an endeavour made to remove the calculus. For its removal small lithotomy forceps were introduced, but after grasping the abnormal object and attempting to withdraw it, it slipped from between the blades, and only portions of phosphatic deposit came away. This happened twice, and an error of diagnosis was suspected; the urethra was further dilated, and the finger introduced, when the supposed calculus was found to be a small fibrous tumour coated with phosphates. It was easily removed by scraping with the finger nail. In this case more careful examination would have shown that the body seen was attached immovably to the bladder wall, the beak of the instrument could have been turned so as to touch it, and the error in diagnosis have been avoided. On reference to Hurry Fenwick's book, I note that he warns us against making such mistakes, and quotes a case very similar to the one I have described.[2]

---

[1] In a case of extroversion of the bladder which I recently had an opportunity of observing, the urine was ejected from the ureters for a distance of 4 to 6 inches when the patient was excited. Ordinarily, however, it merely trickles at irregular intervals from the urethral openings.

[2] *The Electric Illumination of the Bladder and Urethra.* By Hurry Fenwick, F.R.C.S. Second edition. 1889.

I think the numerous recorded cases where affections of the bladder *per se* had not been recognised, or where pathological conditions in the urine had not been correctly interpreted until a cystoscopic examination had been made, clearly prove that frequently all investigation, short of cystotomy, without cystoscopy, may be inadequate to discover the source of the patient's ailment.[1] Indeed, I may safely say that nothing short of *feeling directly* with the finger, or *seeing* the abnormal condition, can enable the surgeon to give a positive or negative diagnosis regarding the presence or absence of some abnormal conditions in the bladder, *e.g.*, tumour or ulcer.

Just as after the removal of a tumour from the body it is frequently impossible to say what its character is until it has been microscopically examined, so with cystoscopic examination,—by it we may observe a pathological condition of the bladder, but we are not yet able to interpret correctly whether in the case of a tumour it is malignant or benign. As we gain more experience, however, of the appearances observed when a tumour is *in situ*, and later have its pathology microscopically determined, we will be better able to give a prognosis as well as a diagnosis.

In the paper which I read before this Society in December 1889, I said, "I think we are justified in the belief that the cystoscope *will prove* a most valuable aid in diagnosis," and I then quoted Sir Henry Thompson, who wrote in the *British Medical Journal* of April 1888 in the following terms:—"Although we should not give up in any respect the simple means of prosecuting diagnostic research hitherto employed, by all means keep the cystoscope in reserve for certain exceptional cases, where other usual methods have been tried and have proved unsuccessful." To-night I am able to say, after a much greater experience of the instrument, that the cystoscope *is of the greatest* value in the diagnosis of genito-urinary disease, and that the surgeon in any case in which he is doubtful of the diagnosis, fails to use all the means at his disposal to form a diagnosis, if he does not attempt to discover the pathological condition by means of its use before he operates. With the cystoscope we are able not merely to say that there is or is not disease of the bladder; but in cases where the condition is due to renal disease, we can demonstrate that the disease is renal, and also which kidney is affected.

I do not think it necessary to examine the bladder cystoscopically in all genito-urinary disease; but careful consideration of the numerous cases which I have now had an opportunity of examining makes me emphatically of opinion that when other means have failed to enable the surgeon accurately to determine the condition from which the patient suffers, cystoscopic examination should be had recourse to before treatment is entered upon or operative interference recommended.

---

[1] Papers by Nitze, Hurry Fenwick, Berkeley Hill, Bruce Clarke, etc.

V.—NOTES ON THE USE OF KOCH'S TUBERCULIN.

By J. Stitt Thomson, F.R.C.P.E., etc., Dalkeith.

Whatever falls from the pen of Dr George W. Balfour cannot fail to prove interesting to the profession at large, and an article on tuberculin treatment must have peculiar interest at this time—a time which we might almost call an "anti-tuberculin period."

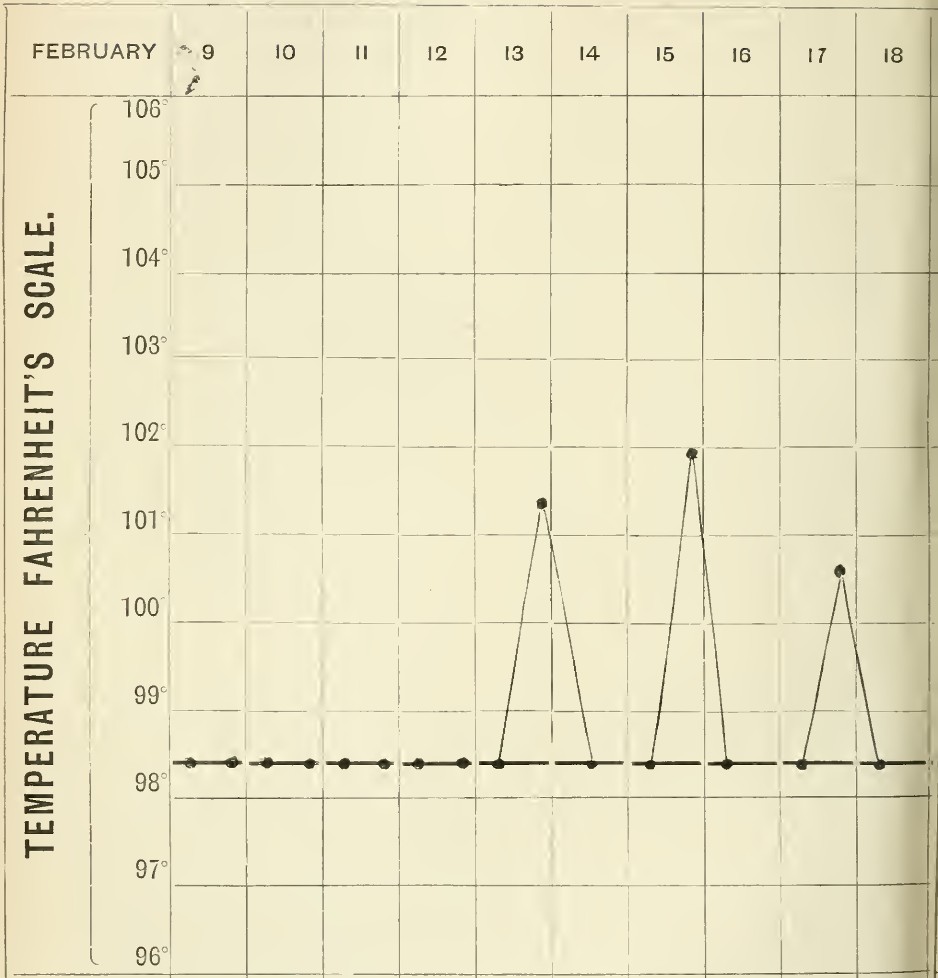
I read with great pleasure the article entitled "A Few Notes on the Use of Koch's Tuberculin," written by Dr Balfour, and which appeared in the August number of the *Edinburgh Medical Journal* of this year; and the point that first struck me was that treatment with tuberculin appeared to have been fairly successful in Dr Balfour's hands. It is well to publish our successes with any new treatment, but equally important is it to place before our medical brethren our failures, and this latter I will attempt to do.

Through the kindness of my late assistant, Dr F. Utten Purchas of Newtown (who had just returned from studying Koch's treatment in Berlin), I obtained early in February last a supply of tuberculin, and having chosen four apparently suitable cases, I, with the assistance of Dr William Lawton and Mr R. R. Stitt, proceeded to treat these after the method recommended by Koch. Like Dr Balfour, I made the tuberculin dilutions with one-half per cent. solution of pure carbolic acid in boiling distilled water allowed to cool. The fluid was injected with a Koch's syringe, and careful cleaning of the latter with absolute alcohol was practised before and after each injection.

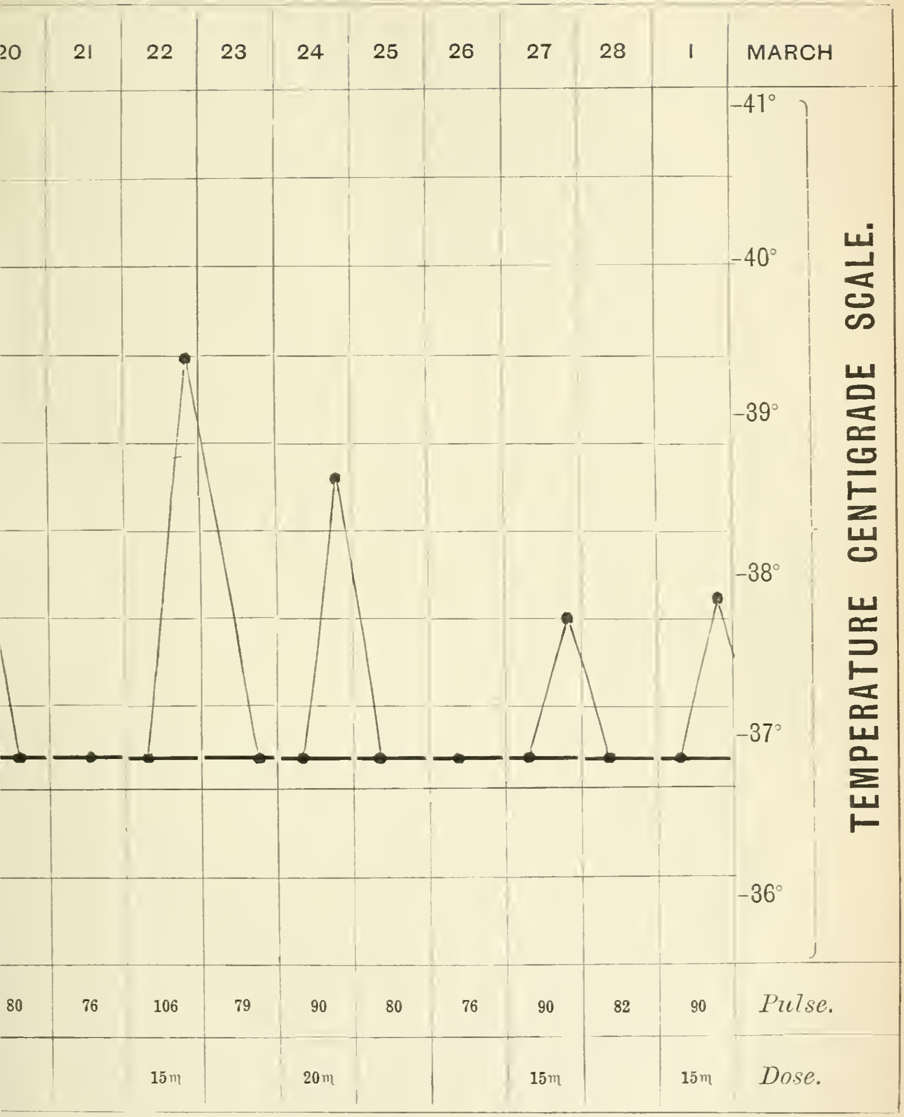
Case I.—W. G., aged 30, had suffered for two years from an abscess in the lumbar region, which was due to a necrosis of the lumbar vertebræ, and for which he had been treated both at home and in the Edinburgh Royal Infirmary. The family history was one of tuberculosis. He was emaciated, hectic, had profuse night sweats, slight cough, and the left apex presented signs of early phthisis. The diagnosis was tubercular disease of the vertebræ, and phthisis pulmonalis in the first stage.

On the 9th February he was injected with 1 milligramme of pure tuberculin. No very decided febrile reaction took place throughout. The temperature never rose above 103°·5.

After four days of treatment the discharge from the abscess considerably increased in quantity, and became thinner in appearance. On the tenth day it almost ceased, and the patient complained of pain and general uneasiness. The cough became troublesome, and the abdomen enlarged rapidly. A severe rigor occurred. The injections were continued regularly and in increasing doses (from 1 milligramme up to 4 centigrammes) until the 24th March, at which time the condition of the patient had become evidently hopeless. The abdomen was greatly distended, due to lardaceous disease of the



FEBRUARY	9	10	11	12	13	14	15	16	17	18
Pulse.	80	80	85	80	120	78	120	80	98	78
Dose.	1♏		3♏		8♏		10♏		10♏	


20
21
22
23
24
25
26
27
28
1
MARCH
-41°
-40°
-39°
-38°
-37°
-36°
TEMPERATURE CENTIGRADE SCALE.
80
76
106
79
90
80
76
90
82
90
Pulse.
15♏
20♏
15♏
15♏
Dose.

liver and spleen. Several exploratory needles were introduced, with the idea that there might be fluid in the peritoneum, but with no result. The emaciation and cough increased, and the patient gradually sank from what I can only describe as a general tuberculosis.

CASE II.—D. G., a relation of the foregoing, a young man aged 20, had suffered from chronic phthisis pulmonalis for twelve months, and was gradually losing ground. Was injected on February 9th, and the treatment was persevered with until the 5th April, when it was evident that no good results were being obtained. After the first injections the expectoration increased greatly in quantity and became thinner, and the râles were more marked over the apices. Emaciation proceeded more rapidly, and although at first some improvement seemed to take place, this condition soon changed, and a rapid wasting, caused chiefly by a persistent diarrhœa, made me consider it advisable not to persist with the treatment. This case is running a downward course, and with the diarrhœa continuing the end cannot be far off.

CASE III.—J. S., aged 30, had suffered for about six years from scrofulous ulcerations of the glands of the neck, and at the commencement of treatment by Koch's method he had, besides the above well-marked ulcerations, several unhealthy-looking sores over the sternum and clavicles. Otherwise he enjoyed good health. On examination his lungs revealed no symptoms of disease, and he was following his employment as a carpet-weaver. All the usual remedial measures had been tried upon these sores, but without success, or at least they remained whole only for a short time and then broke down. The patient was most anxious to have Koch's treatment tried, and I somewhat hopefully began the tuberculin injections in this case, as a cure was reasonably to be expected if there was any virtue in tuberculin at all.

On 9th February the treatment was begun, as in the other two cases, with 1 milligramme of tuberculin. Two days afterwards 3 milligrammes were injected, and, as will be seen by the Chart, no reaction followed these. After 8 milligrammes on the fifth day the temperature rose, six hours after injection, to 101°·4, and subsequently the usual reaction followed each injection, the temperature reaching 103° on the fourteenth day after 15 milligrammes.

The result of the injections upon the sores was remarkable. They from the first took on a healthy action. One gland, after being thoroughly scraped with the sharp spoon, healed almost at once; and after three weeks of treatment the parts were better than they had been for years. A week later, however, a change came over the spirit of my dreams, and a slight cough was complained of at night. A severe rigor took place, and night-sweats were troublesome. The edges of the sores became somewhat inflamed, and pain was felt in the limbs, and a general feeling of illness was experienced. The injections, which had on the 15th of March reached 3 centigrammes, were given only twice a week.

On the 4th April, or nearly two months after the first injection, the wounds presented an unhealthy appearance, and an abscess was forming in the axilla, which, when opened, discharged thin pus.

As the ulcerations were steadily breaking down again, and were becoming even worse than before treatment, it was apparent that Koch was failing to cure. The injections were, however, continued twice a week, 5 centigrammes being introduced each time.

On 20th April a violent hæmoptysis occurred, followed by great prostration and persistent cough, with rapid loss of flesh. The case became one of acute phthisis pulmonalis. The treatment was no longer persevered with, and examination at this date (20th Aug.) reveals a large cavity in right apex. There are marked emaciation, night sweats, some diarrhœa, persistent cough, with large amount of expectoration, and a rapid termination can alone be looked for.

CASE IV.—W. M., aged 30, has suffered from phthisis pulmonalis for over six months. The family history is extremely bad. He has lost weight rapidly, and has had several slight attacks of hæmoptysis. He complained of cough and shortness of breath, and examination of his chest last March revealed a cavity in the left apex.

As he was anxious to have Koch's treatment tried, an injection of 3 milligrammes was given on 20th March. These injections, in increasing doses, were continued for a week, when a violent hæmoptysis occurred during night, and more or less blood continued to come up for several days. Night sweats were much complained of, and a constant cough prevented sleep. The patient lost ground from day to day, and after one month's trial of the tuberculin injections the treatment was abandoned on account of the extreme weakness of the invalid. The case is now running the ordinary course of phthisis, and will undoubtedly have the usual ending ere long.

I am well aware that the notes of the above cases are imperfect, and it may be said that some of them were hopeless from the beginning, and that the treatment was not continued long enough. As regards the nature of the cases, however, some are almost identical with some of Dr Balfour's, and we cannot but regret that his cases were more or less lost sight of before a complete recovery had taken place. The question is, Has a cure been effected at all? The experiences of many medical men must point otherwise.

That we have in tuberculin, as Dr Curschmann says, "an agent possessed of specific properties in relation to tuberculous tissue" is an indisputable fact. As a diagnostic fluid it may be valuable, but of this I am extremely sceptical, and in much smaller doses than those at present given it may prove an antidote to tubercular disease; but as employed in Dr Balfour's and my own cases, I cannot look upon it as less than a poison, which, when introduced into the circulation, not only acts upon diseased tissue, but apparently finds a home in healthy organs, and there sets up a fresh tubercular condition.

In Case I. the course of the disease after treatment is interesting, and from it we may learn a good deal. It is obvious, in the first place, that a free outlet should be provided for disintegrated tissue, as on the drying up of the abscess grave symptoms arose, and no doubt pus in large quantity was retained within the body. Next, as tuberculin does not destroy the bacilli, there must ever be the danger of their migrating to other parts, or, as Prof. Ziegler says, "of the dissemination of the resulting detritus." High authorities state positively that tubercle bacilli are to be found in the blood of patients who have been injected with tuberculin. In this case there was no sign before injection of disease of liver or spleen. After a few weeks of treatment these organs became affected, and it is only reasonable to presume that this sudden and marked lardaceous condition was the result of either the bacilli themselves lodging in these organs, or more likely in this case the broken down tissue along with bacilli finding a home in the liver and spleen.

In Case II. the diarrhœa points to intestinal mischief, and possibly migration has taken place here also.

In Case III., however, we have a most instructive history. Here we have to start with a young man who for six years had been more or less under treatment, who had never during that period shown any symptom of lung mischief, and who at time of first injection was in very good health. Shortly after the injections of tuberculin had been practised lung mischief became apparent, and following a violent hæmoptysis an acute phthisical condition of the right lung developed, and the case is now hopeless.

I hold that here we have suspicious evidence of migration of bacilli, or have we not perhaps a tuberculosis produced as a direct effect of tuberculin?

Our knowledge of tuberculin is so imperfect, and our experiences so varied, that medical men would do well to consider before injecting into the circulation an agent which may truthfully be said to have varying and irregular results. We must know with more accuracy the doses to be employed, and above all let us be certain that we are not introducing into an already diseased body a substance which is capable of making it tenfold more diseased.

VI.—ON RELAPSE OR RECRUDESCENCE IN SCARLET FEVER: TWO CASES, WITH A NOTE ON THE LITERATURE OF THE SUBJECT.

By George P. Boddie, M.B.

(*Read before the Medico-Chirurgical Society of Edinburgh, 3rd June* 1891.)

Various eruptions occasionally appear during the course of an attack of scarlet fever—*e.g.*, roseola, erythema, urticaria. These may be due to dietetic errors; to external applications, such as turpentine, camphor, menthol, carbolic acid, and irritating soaps; or to other causes. Some of these eruptions may even be followed by partial desquamation, but a true relapse or recrudescence in scarlet fever, as opposed to a recurrence, is comparatively rare. When such does occur, important points of diagnosis, prophylaxis, and treatment are necessarily raised.

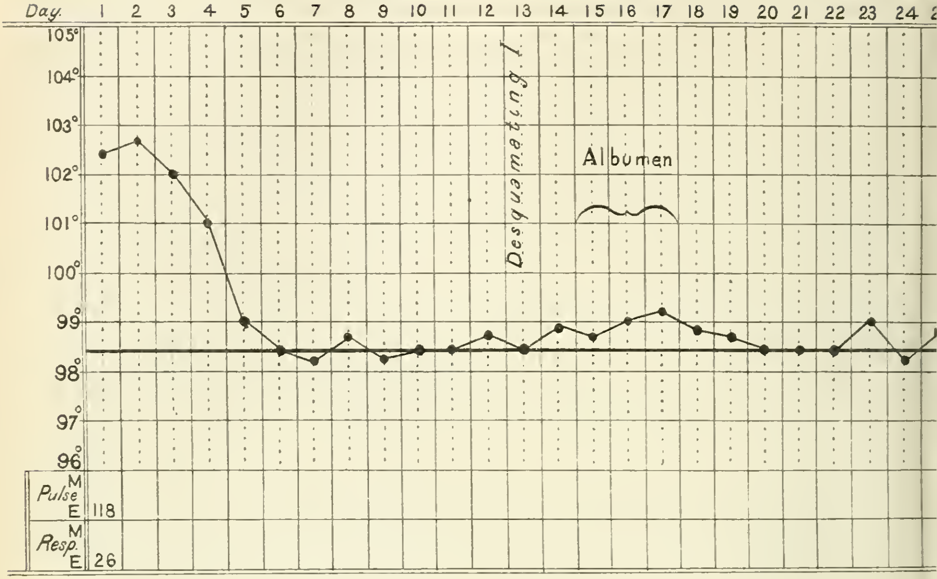
The following two cases seem to be of this nature, and are of sufficient interest and importance to bring under the notice of the Society:—

Case I.—A boy of 14 years of age was, on the 5th of May 1890, seized with shivering, nausea, and headache. On the evening of the following day, when the patient was first seen (I was asked to see him in the absence of Dr Ronaldson, and I am indebted to his kindness and courtesy, not only for allowing me to see the case from time to time, but for permitting me to quote it), his temperature was 102°·4, pulse 118, respirations 26, and he was complaining of headache and sore throat. There was a bright red eruption of very minute points on the sides of the neck, chest, left axilla, down the left side, the left shoulder and arm, and on the right leg. The tongue was coated, and the papillæ were prominent; the tonsils were inflamed, swollen, and patchy; the hard palate, fauces, and pharynx were deeply injected. The cervical glands were swollen and tender. The temperature subsided gradually, and was normal on the sixth day, as you will see on the Chart. On the eleventh day the hands and feet had a shreddy look. On the thirteenth day the cuticle began to separate as a fine scurf, with a few flakes, on the sides of the neck, arms, fingers, and toes. This went on for some twelve days; the desquamation was only partial, but was not confined to the surfaces affected by the eruption. On the fifteenth, sixteenth, and seventeenth days there was slight albuminuria.

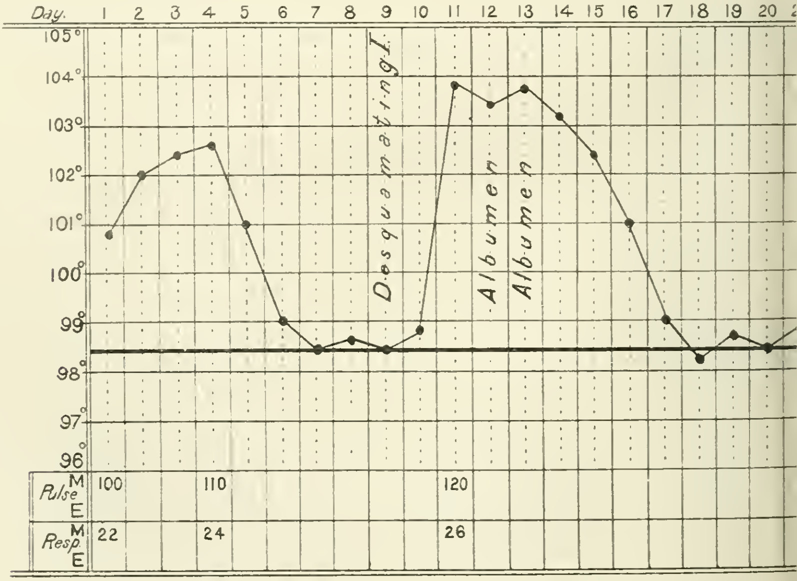
Two children living in the same house passed through undoubted attacks of scarlet fever. A girl, who slept a night or two in the house, was taken ill 48 hours after she left, and was removed to the City Hospital suffering from well-marked scarlatina. Other four persons living in the house suffered from sore throats accompanied by painful cervical glands. The surroundings thus seemed to leave no possible doubt with regard to the diagnosis. Evidently

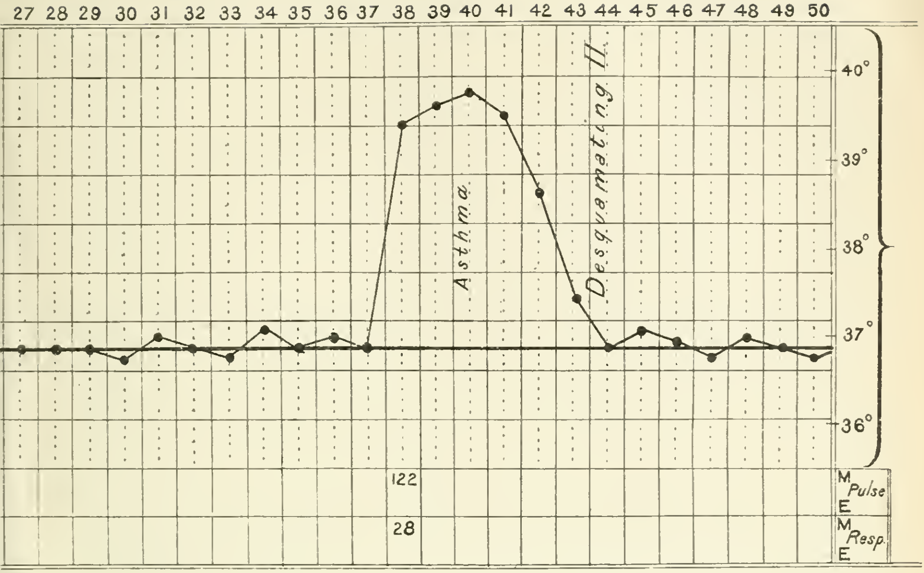
Relapsing Scarlet Fever: Geo. P Boddie.

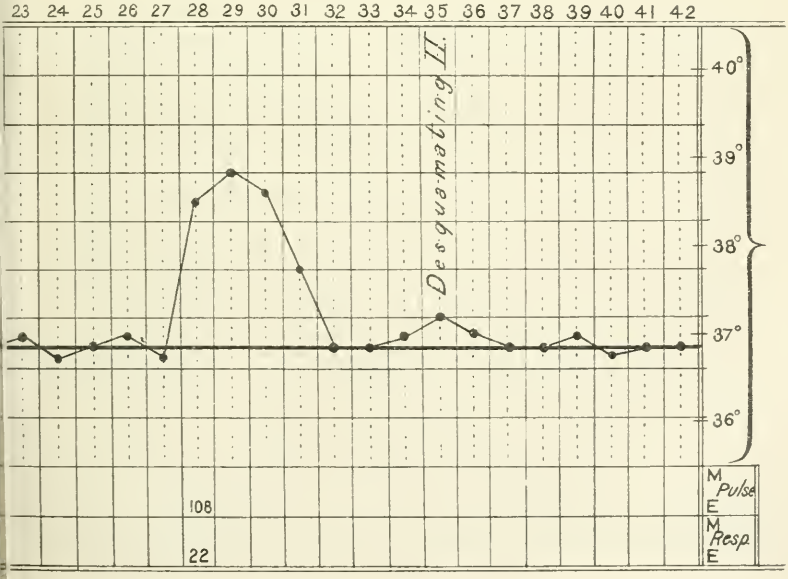
C



C




27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
Asthma.
Desquamating II.
40°
39°
38°
37°
36°
122
28
M Pulse E
M Resp. E


23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42
Desquamating II.
40°
39°
38°
37°
36°
108
22
M Pulse E
M Resp. E

the boy in question had a distinct attack of scarlet fever. Dr Heron Watson, who was attending a surgical case in the house, was good enough to see the boy twice with me, and he confirmed the diagnosis.

Now for the further history. On the 11th of June, that is on the thirty-seventh day, the patient was apparently so completely well that he was permitted to go to the hall of the Edinburgh Exhibition to see the freedom of the city conferred on Mr Stanley. The day, as some may remember, was cold, wet, and raw in the extreme, and the wind east. On the evening of that day he complained of slight shivering and headache. His temperature was rising. Next day the temperature was 103°, the tongue red, the throat again injected, the cervical glands enlarged and tender, though to a less extent than during the former attack. The trunk and extremities showed an irregularly distributed papular red rash, which began to fade on the morning of the third day. Desquamation began on the seventh day, and was more extensive than in the former attack. At the end of five weeks, 72 days from the first illness, the boy was perfectly well.

A point of some interest in connexion with this case may be noted. The boy had for several years been subject to frequently recurring attacks of bronchial asthma. During the initial attack of scarlet fever he was entirely free from asthma, but on the third night of the relapse he had a sharp seizure. Curiously enough he has never had an attack since; and whereas formerly the slightest deviation from a rigid diet brought on asthma, now he is able to eat almost anything with impunity.

Case II.—I speak of the second case in terms of much greater reserve than the first, because, as you will at once see, it presents some points difficult of explanation. It is of interest not merely because it seems to illustrate the occurrence of a relapse of the scarlet fever on the twenty-eighth day, but because there also apparently intervened a concurrent attack of chicken-pox between the initial scarlet fever and the relapse. I give you briefly the main points. A boy of 9 years of age took ill on March 24, 1891,—rigor, sickness, headache, sore throat, swollen and tender cervical glands; temperature when first seen 100°·8, rising later to 102°·6; the body almost entirely covered with a perfectly characteristic scarlatinal eruption, which faded on the third and fourth days. Some school companions were known to have scarlet fever, and two others chicken-pox. A lady whose two children were ill of chicken-pox called at the house on the second day of his illness, but did not see the boy. Desquamation began on the ninth day. During the night of the tenth day he was taken ill, had a sharp rigor, complained of severe headache, vomited, felt extremely weak, and his skin was reported to have been very hot. Next morning his temperature was 103°·8, pulse 120, respirations 26, and he looked very ill. On the face, chest, and wrists a number of vesicles of various sizes, from the traditional millet seed upwards, were seen. During the next four days successive crops of vesicles of larger size appeared. They were distributed over the whole body, on the eyelids, on the conjunctivæ, and on the hard palate. Many of the larger vesicles contained pus. Slight albuminuria appeared on the twelfth and thirteenth days. The whole condition was so marked as to be suggestive even of small-pox. The boy was practically well on the twenty-first day, although the formation and separation of scabs (as well as desquamation) was going on. He remained well till the twenty-seventh day, on the evening of which he was feeling out of sorts. On the twenty-eighth day the temperature rose to 101°·4; there was again slight nausea, loss of appetite, some headache, sore throat, and the appearance of an irregularly distributed red papular eruption. The temperature was normal on the thirty-second day, and practically remained so, as you will see from the Chart. A second desquamation began on the thirty-fifth day; it was partial, and was apparently quite over by the forty-second day.

You will have gathered from what I have said that in the first case the relapse was much more severe than the initial attack; while in the second case the relapse (if so it were) was much milder and shorter. This irregularity seems to be the general experience in such cases.

Thus Rilliet and Barthez write, "Aucune donnée ne peut faire prévoir la gravité de la récidive; elle peut être plus légère ou plus grave que la première, voire même se terminer par la mort" (*Traité Clinique et Pratique Maladies des Enfants*, iii., 154).

In connexion with these cases, it may be of some interest to the members of the Society if I run rapidly over the more important literature of the subject.

One of the first, if not the very first, fully reported case was that of a girl of 3½ years, under the charge of West in the London Hospital for Sick Children, seen by Jenner, and reported by Hillier. The child had measles on June 16, 1854, and a second eruption with all the characters of scarlet fever on the 23rd and 24th of the same month; left the hospital tolerably well on July 21. A week later, *i.e.*, thirty-six days after the first scarlatinal eruption, she was brought back with a papular red rash, which Jenner considered to be that of scarlet fever. Desquamation was taking place. On the forty-fourth day she died from pneumonia. Hillier refers to other two cases,—one a medical student who had had scarlatina three times, and a distinct relapse a week after the third attack; the other a young woman who had a relapse five weeks after the initial attack.

Sir William Jenner, in a clinical lecture on scarlet fever, given at University College Hospital, and published in the *Lancet* of 1870, says:—"Here, again, is the note of another case, ... but in one particular a rare case. I have seen several such, and believe they are more common than is supposed. It is a case of relapse; the patient had scarlet fever twice in a short time" (the relapse occurred on the twenty-second day). "As a rule," he adds, "the second attack runs a short course, but I have seen a patient die in the relapse."

Further references in British medical literature are of the most meagre description. Few of the larger text-books even refer to the subject.

Hilton-Fagge asserts that "relapses are seldom or never seen" *Principles and Practice of Medicine*, i. 216).

W. Squire, in Quain's *Dictionary*, gives the brief note:—"A recrudescence or relapse is possible as late as the fourth week; this, if not a reinfection, prolongs the duration of the infectious period."

Goodhart, in his *Student's Guide to the Diseases of Children*, says, "Relapses are not very rare. Hillier mentions the case of a student who had had three attacks of scarlatina, and a week after his third attack he had a distinct relapse. Thomas describes pseudo-relapses in which a roseolous eruption breaks out after the fever has run its course. They generally terminate favourably." But Thomas also describes true relapses, as we shall show later.

E. O. Hopwood, of the London Fever Hospital, writes, "A relapse, or true second attack of scarlet fever, occurs in about one-half per cent. of cases at any time from the tenth day of the first attack, and is followed by a second desquamation. It may be of any grade of severity" (*Dict. Pract. Med.*, Ed. J. K. Fowler).

Ashby and Wright, in their *Handbook on the Diseases of Children*, p. 213, give the sceptical sentence—"Reinfection or relapses are said to take place in some instances; in cases coming under our notice (*i.e.*, in the Manchester General Hospital for Sick Children), which have had an attack of genuine scarlet fever after admission to our fever ward, there was considerable doubt as to the correctness of the original diagnosis."

Dr David Page, in his *Facts about Fevers*, gives a case of relapse after the fortieth day.

Dr Barrs, of the Leeds Fever Hospital, gives, in 1883, full notes of a case of "complete relapse" on the thirty-first day.

Several other cases are reported in the *British Medical Journal*, the *Lancet*, the *Medical Times and Gazette*, the *London Medical Record*, and other journals, during the last twelve or fourteen years.

The subject has received wider recognition in American medical literature.

In the *Cyclopædia of the Diseases of Children*, edited by Keating, the following passage occurs:—"Second attacks must be distinguished from the cases of relapse which follow immediately in the wake of the first attack, and also from the cases of pseudo-relapse, which are characterized by the recurrence of the exanthem during the second or third week of the disease."

The writer of the article on scarlet fever in Pepper's *System of Practical Medicine* says, "Sometimes a second attack occurs so soon after the first that it has been described as a relapse." He quotes two cases, one of the two being a case of Hillier's already alluded to.

The references in American journals are too numerous for quotation. A note of the more recent of these will be found in the *Annual of the Universal Medical Sciences* for 1889.

We come now to what may be fairly described as the *locus classicus*, viz., the work of Thomas, Körner, and Trojanowsky.

We quote first from Thomas, who has recorded several cases. "As analogous to the relapses of typhoid fever, those cases in which the second attack sets in before the patient has entirely recovered from the first may be designated as true relapses. Few of the reports inform us regarding the number of days which intervened between the cessation of febrile action and the symptoms of the fresh attack. I do not think, however, that we shall err if we include in this category all those cases of a second attack which are reported as having occurred immediately after the first one, and those also in which it is stated that the fresh affection began not later than four or five weeks after the first. Such true cases of relapse have been described by Bartels, Barthez, and Rilliet, Faye, Gaupp, Jenner, Hillier, Kjellberg, Lefèvre, Müller, Marshall Hall, Peacock, Richardson, Röbbelen, Schwarz, Smith, Solbrig, Steinbeg, Steinmetz, Steinthal, Stiebel, Trojanowsky, Wood, and an unknown author, according to Thomson."

"In the majority of cases the first and second attacks were developed with equal completeness; in some cases the second attack was more rudimentary; in a very few cases the first attack was not entirely characteristic. At one time the report states that the first, at another that the second attack was the severer of the two; in several cases the greater intensity or mildness of the subsequent attack seems to have been determined by the contrary behaviour of the antecedent attack, so that both seem to have completed each other . . . . . With the exception of several cases reported by Jenner, Peacock, and Smith, who observed fatal results in children, the relapses of scarlatina always ended in recovery. When the second attack occurs later, it seems that recoveries are still more frequent; at least, I can find but one report of a fatal result, that of West and Hillier, in which the second attack began thirty-six days after the commencement of the first."

So much for true relapse (*ein wahres recidiv*). But Thomas, and also Körner, have described what they call pseudo-relapse (*ein *pseudo-recidiv*). I again quote Thomas: "Sometimes after an attack of scarlet fever, which runs a typhoid course without special local symptoms, or is attended by various local diseases, or perhaps is uninterrupted by any complications, a fresh eruption unexpectedly breaks out over the whole body. In the cases which have come under my own observation, it is never exactly similar to the normal first scarlatinal rash, and yet the resemblance is so strong, and the difference from all other exanthemata so marked, that I have no hesitation in regarding it as an irregular second scarlatinal eruption, and shall therefore distinguish it from the true relapse, which occurs after the normal course of the disease, by calling it a pseudo-relapse. The cause of this anomalous eruption may probably be found in a renewed determination to the skin occurring at an unusual time. Nephritis appears to have no influence in producing the pseudo-relapse, at least this is the experience of myself and others . . . . . During the continuance of the second exanthem, the course of the body temperature is by no means regular and characteristic. This fact may perhaps by itself enable us to distinguish the nature of the new process. I have noted particularly that the maximum of the pseudo-relapse never coincides with the maximum of the temperature." — Ziemssen's *Cyclopædia*, vol. ii., *in loc.*

Trojanowsky (*Jahrbuch für Kinderheilkunde*, 1873) states that among 300 cases of scarlet fever (260 children and 40 adults) he has seen 18 relapses (15 children and 3 adults). That is, you observe, 6 per cent. He has published full notes of ten of these cases. Trojanowsky has further described a recurrent form of scarlatina which is peculiar. "From seven to seventeen days after the first eruption of scarlatina, a second eruption similar to the first, or identical with it, makes its appearance, so that both attacks combined seem to form one scarlatinous affection. Both attacks were accompanied by an unusually high fever, similar to that of relapsing fever, and separated from each other, as in the latter disease, by a complete remission, during which all morbid signs disappeared, again to recur with the commencement of the second attack; in addition to the ordinary symptoms of scarlatina, the spleen, as in relapsing fever, increased rapidly in size from the commencement of the attack, the white blood cells became abnormally numerous, and there was extraordinary prostration together with muscular pains. Now, as most of the patients affected in this manner lived in low and marshy localities, in which relapsing fever occurred almost every year, and also to a certain extent during epidemics of scarlatina, we may freely assume that these cases were the expression of a peculiar combination of relapsing fever and scarlatina."

Körner, of Leipzig, in 1876, published an elaborate paper in the "*Jahrbuch für Kinderheilkunde*," in which, following Thomas, he distinguishes pseudo-relapse (*ein pseudo-recidiv*), true relapse (*ein* *wahres recidiv*), and true second attack (*eine zweitmalige Erkrankung.*) "*A true relapse* in scarlet fever," he says, "is quite analogous to the relapse in typhoid (abdominal typhus); the first febrile process is completely gone, usually desquamation has appeared, sometimes even terminated, when there sets in a renewed manifestation of the disease. There appears for the second time a characteristic scarlatinal exanthem, all the symptoms of the illness begin anew, sometimes worse than in the first illness, often the new exanthem completes the former." Körner supplements his paper by giving notes of thirty-eight cases of true relapse, as reported by the following writers,—Bartels, Barthez, Eisenmann, Gaupp, Marshall Hall, Hillier, Jenner, Krauss, Kjellberg, Lewin, Landeutte, Lefèvre, Müller, Rilliet, Richardson, Röbbelen, Solbrig, Steinthal, Steimmig, Schwarz, Shingleton, Steinbeck, Stiebel, Steinmetz, Thomas, Trojanowsky, West, Wetzler, and Wood. He also gives notes of five cases of pseudo-relapse, and a long list of cases of true second attack.

Gumprecht, in the course of his experience at the Friedrichshain Hospital, made careful observation of 228 cases of scarlet fever, and in this number met with 13 "pure cases of relapse," *i.e.*, 5·7 per cent.

Fürbringer, who cites Gumprecht's calculation in the *Real-Encyclopädie der Gesammten Heilkunde*, 1889, says that, in the course of his 14 years' experience in Baden and Thuringia, he only met with occasional cases, and it always appeared to him that the relapse was "a fever following the true initial scarlatina, independent of it, caused by no apparent complication, of very variable type, and lasting for days or weeks."

Reimer, of St Petersburg, in the *Jahrbuch f. Kinderheil.* for 1876, published a detailed report of a case in a boy of 7. The relapse occurred on the eighth, and death on the tenth day. The attack was complicated by pneumonia and hæmaturia. The second exanthem and the hæmaturia appeared coincidently.

Huettenbrenner, of Vienna, reports that he has seen several cases.

I must omit several other references. Henoch's statement, however, is so valuable that I make no apology for quoting it in full.

"Although not so commonly as in typhoid, still relapses do occur in scarlet fever. After the patient has been quite free from fever for several days, or even weeks, and desquamation has begun in the normal way, the rash suddenly sets in afresh, either over the whole body or only on some parts of it, the temperature again runs up, and the disease goes through its course a second time. In such relapses the symptoms may be more severe than they were in the first attack. The reddening of the skin during desquamation is very interesting, and has a quite peculiar appearance. Practitioners have given more and more attention to these relapses since the publication of the observations of Trojanowsky, Thomas, and Körner; and I have seen at least a dozen cases. I shall only mention the following." Here follow notes of eight cases. He comments on these so:—"In these cases we cannot speak of a fresh infection any more than we can do so in the relapses of typhoid fever; and I can only account for them by supposing that the scarlatinal virus had not been completely eliminated by the first attack, and that therefore a relapse was inevitable. If stricter attention were given to the subject, it would probably be found that relapses are much commoner than is generally supposed. But you must not expect to find in every instance such a typical series of symptoms as in our first case. We are more likely to find single symptoms, fever or rash, appearing so transiently that they are apt to be overlooked, especially in practice among the poor. On the other hand, we must take care not to mistake simple erythema or urticaria (which I have often seen following scarlet fever) for a relapse; because with the latter there is invariably renewed desquamation. In any case we must not regard the relapse as at all less important than the first attack. Several cases, including some in my own practice, seem to show that a relapse may end fatally from pneumonia, or with malignant symptoms, even when the primary attack has had a perfectly normal course" (*Lectures on Children's Diseases*, transl. J. Thomson, ii. 232, *et seq.*)

A word or two on French literature and I have done. The condition has been fully realized, and many cases have been reported by Jaccoud, Lefèvre, Rilliet, E. Barthez, M. Laugier, A. Sanné, and by several other writers.

Thus Jaccoud, in his *Traité de Pathologie Interne*, 1883, iii. 558, makes the following comments:—"Scarlatina is capable of recrudescence or relapse like typhoid fever. This relapse, which must not be confounded with a recurrence, takes place during the period of desquamation, or immediately after: the attack in question is not a second infection, but a redoubled manifestation of one and the same single poisoning. This relapsing scarlet fever, quite analogous to relapsing measles, has been positively demonstrated by the works of Trojanowsky, of Thomas, and of Körner."

M. Maurice Laugier reports (*Gazette Hebdomadaire*, 1871) a case of a patient who, on the fifteenth day of a comparative mild scarlatina, had a relapse which assumed a malignant type, with hæmorrhages, and was rapidly fatal.

In their *Traité des Maladies des Enfants*, 1891, iii. 153, Rilliet and Barthez write:—"The older authors denied the possibility of relapse, but we possess well authenticated cases. Wendt, Richardson, Noirot, Meissner, Wood, Heyfelder, Unterberger, May, and other authors have, as well as we, produced examples."

WHAT SHALL WE DO WITH OUR NEWLY QUALIFIED MEN?

By a Locum Tenens.

Previous to taking the serious step that leads to the study of medicine, the problem was, What shall we do with our sons? and it would seem hard that another question of almost the same gravity should present itself after the first has been solved with tolerable satisfaction.

If our thoughts could have been registered at the time when we first began to frame our minds for the more practical branches of medical study—when we first understood why hydrogen, being like all matter subject to the law of gravitation, ascended instead of descending—we could more easily appreciate the comparison between the helpless imbecility of infancy as contrasted with the mature thoughts of manhood and the student's dreams at the commencement of his curriculum, as contrasted with the stern reality when he is about to be launched into the world.

The comparison between the development of the infant and the student's career at college hits it in several respects. Both are left pretty much to the guidance of others and to their own instincts; both have to depend on a special form of nourishment; and both must, sooner or later, undergo a process of weaning.

It is true that an infant may do well on any of the recognised forms of nutriment; but whether it be fed on the mother's milk, the milk of a wet-nurse, or bottle-fed, a time will come when coarser food must be substituted; and whether the student be trained at an Alma Mater, a college or a provincial school, he will, when in possession of his coveted diploma, be obliged to partake of cruder forms of mental nourishment in the shape of general practice. And it is at this stage of development that the young practitioner might do worse than exercise a little care and judgment. For, unless he is careful in choosing a practitioner with whom he may bring into practice the theory he already knows, he will by no means adapt himself for a practice of his own.

I shall presume that every newly qualified man who has not seen general practice is desirous of spending a year or two in some practice or practices where he can "pick up" some experience in the methods of conducting one. This is, I think, better than exercising his patience by sitting behind his own doorplate. Still, there are a certain number of men who do well by "setting up" immediately on the receipt of their diplomas; but again, there are others who by a series of slips and bungles, due to want of practical experience, have their ambition stunted in its growth, which, unless their minds are well balanced, renders them timid and unreliable, and causes them to express a wish that they never had entered the profession.

Just as one literary man judges of another's knowledge from his library, so may one medical man form an opinion of his neighbour's work by a look into his surgery. It may not, therefore, be out of place to give an outline of a few types of general practice.

There is the elaborately fitted-up establishment. These are—the surgery with a complete set of drugs, a consulting-room containing instruments for all operations, a waiting-room, and the doctor's private room; two dogcarts, a brougham, and a stylish coachman; surgery boy in buttons, who addresses you in the third person, and speaks of chlorotic servant girls as "Miss." Principal, a young man backed up with a private income or living with a rich parent.

Closely allied to this kind of practice is the one found in a wealthy country district. Here there is one large room which represents the surgery, consulting and waiting-rooms. Tremendous display of bottles, pills, and instruments. Principal, who goes in strongly for treatment and reads Ringer, has been house-surgeon to various hospitals. No cases sent away.

Then there is what may be termed the "business practice." A very old established concern. Comprises town and country work. Three horses kept. A curtain divides the surgery into two parts, one of which is used as a waiting-room. The consulting-room, which gives you an idea of an old curiosity shop, is one mass of confusion; papers and instruments all out of place. The principal holds all the club appointments and is public officer of health. He is very active and practical, and drives about like Jehu in the capacity of the Brazen Serpent—tongue—pulse, and writes Mist. Gent. Acid. opposite the patient's name. Was once well read, but now reads the *Live Stock Journal* only. The rapidity with which he diagnoses and dispenses for about twenty patients is a sight well worth seeing.

The colliery style of work deviates a little from others. In one colliery practice you meet with a shrewd old gentleman with about a dozen assistants, some of whom take charge of branch practices. There are drugs and appliances for all cases. The assistants are summoned, like a fire brigade, by means of the telephone, to any serious or interesting case. All club work, even the midwifery. This description does not hold good in all colliery practices. The writer once spent a few weeks in a colliery practice (club), where he counted for curiosity the number of drugs in the room (surgery, waiting, and consulting room), and found that there were nine in all (excluding, of course, furniture paste, gum, etc.) There were three boxes of pills, one variety of which was Blaud's, and in which were cracks resembling earthquakes.

The instruments were, a tooth instrument (which positively refused to seize a canine), midwifery instruments, a knife or two, and a pair of tack pliers, which the writer used to amputate a portion of a thumb.

I witnessed the owner of this practice make up some medicine for a patient who made his own diagnosis as "badly." He took hold of a bottle with his right hand, and with his left he procured from a drawer a handful of sod. bicarb., which he placed over the neck of the bottle. Some of the sod. bicarb. went on the floor, some inside the bottle, and some on the outside, thus illustrating the law of "random distribution with average uniformity." After adding a few drachms of a fluid from a tea-pot containing water and quassia chips (some of which found their way into the bottle) and "aquæ ad," he handed the mixture to the patient with an air of entire satisfaction.

There are, of course, other varieties of medical practices. For example, the East-end style, visit and medicine from eighteenpence downwards. "No eighteenpence no medicine." And the young medico with his surgery upstairs, the drugs being protected by a screen. Screens seem more common in surgeries than tracheotomy tubes. Their liability to be found in a surgery is in indirect proportion to the number of drugs. Their function is not known with certainty, but when placed between the light and the drugs they would protect the latter from the decomposing effects of the former.

If I were (I say *if*) addressing a number of medical tyros, I should hold forth somewhat in the following strain:—Before engaging to act as an assistant, first ascertain the nature of the practice in which you propose to work. In some practices you would either unlearn what you already knew, or learn very little. If you are going to act as a *locum tenens* (which requires you to have the composition of a diplomatist) have your name placed on the *locum* list of some good wholesale druggist. Beware of concentrated drugs and careless labelling. If you give Aq. anethi eighty times the strength you supposed it, the infant will positively effervesce. Do what is correct, and don't be affected by insults. They seem a natural concomitant in the life of a medical man. Never think you know more than anybody else. You will often be tempted to break this rule when you see the diagnosis and treatment of some practitioners. Some time ago there was a war by correspondence between principals and assistants, and one of the latter stated that he knew an old practitioner who treated strumous disease of the knee by the topical application of lettuce leaves. I have known a practitioner who made both jaws edentulous as the preliminary treatment of a case of thrush in an adult. Calomel gr.j., aq. ad ℥ij., was, however, the prescription of a young medical man. Nevertheless, many an old practitioner can give a wrinkle or two to a young man, but the old adage, that a man is either a fool or a physician at forty, is particularly true when applying to a man with a medical diploma. How many of you can describe the attitude of a sleeping infant in health? Another piece of advice I would give you. Listen. A good listener is possessed of at least one ingredient of *politesse*. Was it not John Hunter who listened a whole hour to a patient with impotence? Patients will think more of you if you will listen to their "tale of woe." Practising medicine is like singing comic songs, a great deal depends on the *air*.

Part Second.

REVIEWS.

Annual of the Universal Medical Sciences: A Yearly Report of the Progress of the General Sanitary Sciences throughout the World. Edited by CHARLES E. SAJOUS, M.D., and seventy Associate Editors, assisted by over Two hundred Corresponding Editors, Collaborators, and Correspondents. Illustrated with Chromo-lithographs, Engravings, and Maps. 5 volumes. Philadelphia: F. A. Davis: 1891.

WE have again to welcome the arrival of the fourth yearly issue of this magnificent result of well-directed industry and enterprise. The chief editor and his associates must have had a most laborious task thus to tabulate and condense the medical and surgical work of the world into these five beautiful volumes. The publisher has done all that lavish expenditure in typographical luxuries, in indices of all kinds, in drawings and tables, can do to facilitate easy reference. Any medical man who wishes to know all of value that has been written on any given subject in the past year can find it for himself in ten minutes in these volumes. He can get the gist of the information in the admirably condensed notices, and the exact references in the ingenious figures which accompany them. The journals referred to are 995, and, in addition, 170 books, monographs, and theses are consulted.

Epidemic Influenza: Notes on its Origin and Method of Spread. By RICHARD SISLEY, M.D., Member of the Royal College of Physicians of London. London: Longmans, Green, & Co.: 1891.

THE occurrence of the influenza epidemics of 1889-90 and of 1891 raised again the question, hotly debated in 1782 and in 1803, whether the disease is spread by contagion or by aerial contamination. Dr Sisley strongly supports the former theory—indeed so strongly, and with so little regard for the other side of the question—for he mentions it only to scoff at and disbelieve in it—that we are tempted to believe that there must be some cogent reasons for so many of the ablest physicians in this country and abroad accepting and upholding the idea of the visitation being due to a more universal cause. It is unfortunate that those who take upon themselves to write books so often refuse to visualize mentally—to use a psychological expression—all aspects of their subject before committing themselves to paper. A particular disease may be due to one particular cause, but that we can get it in only one way does not follow, and epidemic influenza may well be propagated by a poison, organismal or non-organismal, carried by the wind and rain,—a poison which can also be communicated from person to person. It is no argument against this to say that all would get it at once under those circumstances, for all are not equally exposed, nor does everyone take it even when exposed to the most virulent contagion.

The author has gone most fully and carefully into the past history of the disease, and traces it eastwards into China, in parts of which country it seems to be endemic. No mention is made, however, of the assertion, which appeared in the public journals at the time, that the great floods in the east of China were the beginning of the endemic becoming epidemic. From the records of the death-rate in the capitals of Europe most excellent charts have been constructed, which prove conclusively that the former and generally accepted accounts of the sudden and simultaneous affection of great numbers are erroneous, the death-rate going up by leaps and bounds, in truth, but not absolutely at once. Still more conclusive are the numbers of those affected progressively in some of the large factories and schools in this country ; for the death-rate from influenza can be the less depended on, since it is usually from intercurrent attacks of bronchitis, pneumonia, and other acute or chronic diseases, whose course is variable, that it is chiefly swelled ; and in these places it is seen at once that isolated cases occurred before the general attack, just as in other epidemics.

Two other of the arguments may be quoted. The one, that influenza spreads over the lines of human intercourse, the recorded death-rate of St Petersburg beginning to rise at the beginning of November 1889, in Vienna and Berlin at the end of the same month, in Paris during the first week of December, and in London and New York during the next week. The mortality rose highest in Paris, 62 per 1000 ; lowest in London, 32·5 per 1000. The other argument is, that prisoners and inmates in religious houses or asylums escaped in a great degree the prevailing disorder.

A chapter is devoted to the spread of the disease by means of parcels and letters, but the author confesses that he has insufficient material to enable him to deduce results from it. The question whether animals can communicate the malady to man is also discussed, but no decision come to, each of the authorities quoted being at variance with the other.

The author has evidently devoted much time and labour to his book, and it is beautifully got up ; why there should be, however, two whole pages of italics before some of the chapters is not easily discovered. As an appendix, the Infectious Disease (Notification) Act, 1889, is quoted *in extenso.*

Contributions to Practical Medicine. By Sir JAMES SAWYER, Knt., M.D. Lond., F.R.C.P. Lond., F.R.S. Edin., etc. Second Edition, Revised and much Enlarged. Birmingham : Cornish Brothers : 1891.

THIS is a very good book of its kind ; it conveys to the reader bits of the ripe practical experience of a leader in the profession.

It is art rather than science, the wisdom which has been tested by practice rather than the theory evolved in the study.

The first chapter on the Etiology and Management of Insomnia is interesting and valuable. To discover and remove the cause is better far than to treat the symptoms. What will the rabid opponents of alcohol say to this sentence? "If I am sure of anything in therapeutics, I am sure that alcohol is the best hypnotic in many cases of chronic psychic insomnia,—when the patient is worried, sorrowful, weakly, and anæmic" (p. 39).

Before leaving this chapter we may point out a curious misprint in the fourth line from the foot of p. 25, *saggital* for sagittal.

Students of the Edinburgh School who knew and loved Warburton Begbie will be interested in Chapter IV., in which Sir James Sawyer recommends chloride of calcium as a remedy in certain cases of phthisis. Chapter V. is the most important and valuable in the book, on the severer forms of Constipation and of Intestinal Obstruction. The relative duties of the physician and the surgeon in such cases are discussed with sense and precision.

At p. 104, in a most graphic description of a case of acute intestinal obstruction, Sir James gives under the head of causes "a blow on the belly." This cause is ignored or denied by many authorities as a cause of obstruction, and the exact *modus operandi* is not very easily understood. It would be an interesting subject to work out. A possible chain of events might be, the blow, not sufficiently severe to rupture, might paralyze the peristaltic action of a portion of the bowel, and thus predispose to fæcal retention, reversed peristalsis, and intussusception, or twist, partial or complete, of the affected loop.

Sir James prefers laparo-ileotomy to laparotomy in acute cases after the method of Nelaton, and sums up his own experience in the following pithy but severe words:—"So far as cases within my own knowledge have enabled me to judge, I have been inclined to conclude, that it is usual, in laparotomy, for a surgeon to find 'something,' and to relieve it, and that it has nevertheless been very usual for the patient to die shortly afterwards" (p. 114). Gastralgia is well described and treated boldly, if empirically, by indulgent feeding and a full course of arsenious acid in pill. Some excellent practical observations on the use of ethereal solutions of certain external remedies, instead of the usual tinctures, is less needed in Edinburgh than in Birmingham, as since the beginning of the century the *ethereal tincture* of iodine is a well known and valued remedy.

The Treatment of Typhoid Fever, especially by "Antiseptic" Remedies. By J. BURNEY YEO, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, and Physician to the Hospital. London: Cassell & Company: 1891.

THIS is the substance of a lecture delivered in King's College Hospital, and published in the *Lancet* with some additional observations, and is intended to show the great inhibitory power some antiseptics have over the typhoid bacillus. The author prefers a mixture of quinine and free chlorine, giving 12 to 36 grains of quinine in the twenty-four hours; and, in truth, the cases recorded show some wonderful results, and, if corroborated, ought to lead to the general adoption of the treatment. α and β naphthol, sulphide of carbon, and thymol are among the other antiseptics mentioned and illustrated. In all, a useful addition to our knowledge of the treatment of a very troublesome disease.

Outlines of Medical Treatment. By SAMUEL FENWICK, M.D., F.R.C.P., Physician to the London Hospital; and W. SOLTAN FENWICK, M.D., B.S.Lond., M.D.Stras. Third Edition. London: J. &. A. Churchill: 1891.

IT is doubtful whether the plan of separating the treatment and prognosis of disease from the account of its symptoms and diagnosis is altogether a correct one, or whether it is not better to describe the *rationale* of the action of remedies in a more scientific spirit than in this volume, in which, in too many cases, no reason is given for the exhibition of a drug or the adoption of some plan of treatment other than mere empiricism. However, the fact that a third edition has been called for shows that the book, for whose excellence in its own way the name of the authors is sufficient guarantee, is appreciated by the medical profession. The third edition has been enlarged, a new chapter on "Diet and Regimen in Chronic Diseases" has been added, the list of prescriptions revised and increased, while each section has had appended to it a short description of the methods employed by practitioners of other countries, chiefly American, French, and German.

Pasteur and Rabies. By T. M. DOLAN, M.D., F.R.C.S.E. London: George Bell & Sons: 1890.

THE controversy, Whether Pasteur cures rabies by his inoculations or causes it in some of those upon whom he operates, still goes on. During the first craze men such as Peter, Guerin, and Lutaud were howled down as blasphemers when they warned against possible dangers; but by-and-by fatal cases emerged and lessened the enthusiasm and faith which were at first accorded to the method, and discredited its infallibility. Its advocates are now satisfied with averages, and claim to have reduced the mortality of rabies from 15 to 1 per cent.

The author of this little book shows in his introductory chapter that many people are bitten annually without bad results, and also that many are bitten by undoubtedly rabid dogs and yet escape. But it is the fashion to seek protection by inoculation when any one is bitten now, and "cures" are easily effected where no evil result would have followed in the course of things.

At pages 14 *et seq.* we have tables furnished by Dr Dujardin Beaumetz, Officer of Health of the Department of the Seine. The deaths from hydrophobia in that district were 38 for the four years 1882-1885; for the four years 1886-1889, in the same area where Pasteur is at work, and where the advantages of his method are enjoyed to the full, the deaths were 37. So that the mortality in anti-vaccination days and now is just the same.

Chapter IV. shows the number of deaths in Paris hospitals from 1881 to 1885; general total, 26, or 5·2 per cent. instead of 12 per cent., as Pasteur asserted in a note to the Academy of Medicine, 2nd November 1887.

At page 74 the author gives an interesting diagram showing the deaths from hydrophobia in England and Wales, Ireland and London, from 1837 to 1888; the wonderful fluctuations in the death-rate are instructive to see.

The author agrees with Drs Peter, Lutaud, and others, that Pasteur's method is a deception as a cure, and is responsible probably for the increase of paralytic rabies, a disease formerly almost unknown in the human subject. And yet in Section 3, at the meeting of the British Medical Association this year, every speaker had nothing but approval of Pasteur and his methods. Where opinions conflict so, it would seem safer to destroy all suspected dogs and muzzle all sound ones, and so stamp out the disease and obviate the need of Pasteur Institutes.

A Manual of Practical Electro-Therapeutics. By ARTHUR HARRIES, M.D., and H. NEWMAN LAWRENCE, M.I.E.E. No. 3 Nursing Record Series. London: Sampson Low, Marston, & Co., Limited.

THIS volume of 130 pages is intended to form an introduction to the study of the medical applications of electricity. The lessons are intended for nurses and others applying electricity for therapeutic purposes under the direction of a medical man. The first portion of the book is devoted to an exposition in simple language of the fundamental principles of electrical science, with a description of the principal forms of instruments employed. The latter portion deals with the uses of electricity in Medicine and the best modes of applying it. The style is concise and generally clear, though loose expressions and some obscurity of statement occur occasionally. The illustrations, though artistically crude, are usually sufficiently intelligible. The book includes a series of examination questions applicable to each chapter or lesson, and ends with a glossary of the technical terms employed. The work may be safely recommended to those for whom it is intended, and it might indeed with advantage be studied by many whose readiness to prescribe electricity is out of proportion to their knowledge of the nature and properties of the force with which they are dealing.

Massage for Beginners; or, the Masseuse's "Vade Mecum." By LUCY FITCH. No. 4 Nursing Record Series. London: Sampson Low, Marston, & Co., Ltd.

THIS little work is not intended in any sense as a text-book of massage. It consists simply of a series of brief but clearly expressed descriptions of the mode of performing the various movements and manipulations employed in the art. It also gives some hints as to the personal bearing of the masseuse in the sick-room, which are characterized by sound common-sense. The work may be commended as a useful pocket companion to those practising massage.

Lewis's Pocket Medical Vocabulary. Second Edition, thoroughly Revised. London: H. K. Lewis: 1891.

THIS is a good little book so far as it goes. Any educated medical man will find nothing in it that he does not know, but nurses, chemists, amateurs, curates, *et hoc genus omne*, may possibly find instruction if not amusement, and it may help that most useful and omniscient class of men, the proof readers, to read their proofs correctly.

Ophthalmic Charts. Down Bros., London.

MR HAYDON has published a series of Charts intended for the graphic recording of diseases of the eye.

These embrace the front of the eye for external changes, sections of the eye suitable for filling in pathological conditions seen on enucleation, and coloured discs and squares on which ophthalmic appearances may be drawn.

The charts are well finished and moderate in price, and should be of service to students.

The coloured pencils recommended are the Creta Lævis, made by E. Wolff & Son. White is best given by liquid Chinese white.

A Dermatological Bibliography. Compiled by GEORGE THOMAS JACKSON, M.D. New York: 1890.

THIS is a disappointing pamphlet. Made up from trade lists, it is not only imperfect, but calculated to mislead. Thus, while the splendid *Atlas der Hautkrankheiten* of Hebra and Kaposi has not only long been published, but can hardly be obtained at any price, only one part is mentioned, as if no more had appeared. The same book appears several times, as if copied from different catalogues. Till a complete record of works on skin diseases and syphilis is forthcoming, this may be of some use as a reference handbook, but no one can depend on finding here all he may want.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXX.—MEETING XI.

Wednesday, 8th July 1891.—Professor SIMPSON, *President, in the Chair.*

I. EXHIBITION OF PATIENT.

Dr Smart showed a patient, a woman 50 years of age, exemplifying complete recovery from SEVERE DIABETES MELLITUS after eight years' continuance. When first seen by Dr Smart she was eliminating nearly 12,000 grains of sugar daily, the urine being over 200 ounces daily. The cure of her disease was effected within a year from the commencement of treatment, and has not, after seven years, returned, although during that period she has been taking absolutely unrestricted diet.

II. EXHIBITION OF SPECIMENS.

1. *Dr W. Russell* showed a KIDNEY with a large sarcomatous growth in it, and with rounded projecting growths on the pelvis and calyces, which were covered by urinary salts, giving them a mulberry appearance, and closely resembling calculi.

2. *Dr Alexis Thomson* showed for Dr Harvey Littlejohn two cases of RUPTURE OF THE GUT FROM VIOLENCE, and a case of INTUSSUSCEPTION OF THE BOWEL:—

(1.) *Ruptured Intestine due to Violence.*—Woman, aged 40, quarrelled with her husband on Saturday night, and is said to have received a kick on abdomen. Complained of pain in abdomen, and illness all Sunday, and died on Sunday night; was able to go about on Sunday, and never accused her husband of kicking her.

P. M.—No external marks of violence, but on opening abdomen an extravasation of blood about size of an orange was found in and under the peritoneum to the left, and below the umbilicus. Intense peritonitis, recent yellow lymph matting the intestines together. The omentum was fixed by a small adhesion near inguinal ring. There was a tear in the omentum with mass of clotted blood; below this (after reflecting omentum) was found a rent in the mesentery with ragged edges, and of uneven shape, coated with lymph. On removing this a coil of intestine lying against the vertebral column was found covered with lymph, under which the bowel was ruptured in *two places.* The injuries in the omentum, mesentery, and gut were all in a direct line from bruise on peritoneum.

Points to be noted.—1. No external injury. 2. Power to move about house, and take food after the injury on Saturday night. 3.

Triple injury to:—(1) omentum, (2) mesentery, (3) gut. 4. Character of injury to gut, viz., double rupture. 5. Did a kick, or could a fall have done it?

(2.) *Ruptured Intestine due to Violence.*—Man while at work with a circular wood saw received a severe blow in right iliac fossa from plank of wood. Walked home; went to bed ill and vomiting. No fever, great bruising of right iliac fossa, hip and thigh. Died in forty-eight hours.

P. M.—Peritonitis more or less general, but no lymph effused as in former case. Great number of small hæmorrhages on surface of the intestines. A rupture was found in the ileum, which was peculiar from the fact that it resembled very closely an ulcer,—this appearance, however, being due to the edges being folded back, and held down by adhesions, and to the circular shape of the rupture.

(3.) Shows very well the appearance of the bowel in *Intussusception.*—The history obtained is the following:—A girl aged eight years returned home from school complaining of a sore belly. Nothing was done at first. Later she was taken to a chemist where she got a dose of castor oil. This apparently doing no good she was taken to another chemist, who administered a dose of jalap. Severe vomiting and diarrhœa set in, and she died in three days.

P. M.—Abdomen distended. On opening abdomen all intestines were seen to be of deep plum colour. No peritonitis. *Intussusception* found high up in jejunum. It felt like a bag of porridge, and presented a somewhat circular appearance, the two extremities being approximated.

Points to be noted.—1. No peritonitis; 2. All intestines full of plum-coloured mucus; 3. Intussusception high up in jejunum; 4. Medico-legal relations *re* responsibility of parents and chemist.

3. *Dr John Thomson* showed a portion of SMALL INTESTINE showing a *Meckel's Diverticulum*, from a child aged ten months. The diverticulum was 1¼ inch in length, and was quite free at its extremity, which was slightly bifurcated. It was situated nearly 30 inches above the ileo-cæcal valve.

III. ORIGINAL COMMUNICATIONS.

1. *Dr G. Lovell Gulland* read his paper on the FUNCTION OF THE TONSILS, which will appear in a future number of this Journal.

Dr M'Bride thought the paper did not lend itself to discussion, because it was hardly fair to attack the numerous and valuable facts adduced by Dr Gulland by theoretical objections. Dr M'Bride was not a great believer in the palatal tonsils *per se* as a cause of deformities of the jaws and chest; yet when both hypertrophy of the palatal and pharyngeal tonsils existed, such deformities may occur; and undoubtedly, in spite of Dr Gulland's observations, removal of hypertrophied tonsillar tissue is often followed by immediate improvement in the general health. The tubal tonsil is generally imbedded in the cartilaginous portion of the Eustachian tube, and is disseminated. It may be that this distribution of lymphoid tissue assists the ciliary action, preventing the ingress of fœtor-causing organisms into the tympanum. In conclusion, he begged to thank Dr Gulland for his most valuable and instructive paper.

Dr Berry Haycraft congratulated Dr Gulland upon the care with which he had carried out a difficult investigation, and upon the microscopical preparations by which his paper had been illustrated, which proved that he (Dr Gulland) had made himself a master in a difficult branch of histological technique. In respect to the protective action of the tonsils there might be some difficulty in accepting part of Dr Gulland's conclusions, for we must not forget the rapidity with which food passes through the pharynx, the fact that living cells (unlike a solution of organic matter) cannot come in at all intimate and rapid relations with food, and also that almost immediately the ingested material is acted upon by the acid gastric juice, undoubtedly an enemy to most organic ferments, and inimical to the leucocytes themselves. In this case the protective action of the tonsils could be only a very local one, and there would be difficulties in the way of regarding these structures as set to guard the alimentary canal and body generally from infective assault. Dr Haycraft also raised a question concerning the development of the tonsils, and the rapidity with which the leucocytes are formed.

Dr James Ritchie said that increase in the size of an organ did not mean an increase of healthy function, often the reverse. He asked Dr Gulland whether the leucocytes in enlarged tonsils exhibited any perceptible evidence of diminished vitality?

Dr Gulland thanked the Society for the attention with which they had listened to his paper, and said, in answer to Dr M'Bride, that he did not mean that hypertrophy of the tonsils had no effect in producing deformity of the chest, but only that more attention should perhaps be paid to the constitutional factor than was sometimes done, that rheumatism and other causes did, of course, allow tonsillitis to occur, but possibly rather by their general debilitating effect than by any local action, and that the tonsil of the Eustachian tubes seemed to be the most variable of all the tonsils in its occurrence, its size, and its position. In answer to Professor Haycraft, Dr Gulland said that whilst the bolus of food in its passage might perhaps press some leucocytes out of the crypts, they could not possibly be mixed fully with the food, and that the micro-organisms swallowed in that way must be dealt with by the gastric juice and the adenoid tissue lower down in the alimentary tract; that the process of breaking down of the epithelium was a slow one in all probability. In answer to Dr Ritchie, he said that the leucocytes produced in hypertrophied tonsils were the same in structure as those produced by the normal tonsils.

2. *Dr Smart* read the first of a series of papers on CLINICAL EXPERIMENTAL INQUIRIES TO DETERMINE THE INFLUENCE OF DIET AND DRUGS IN THE ELIMINATION OF SUGAR IN DIABETES MELLITUS. *First Series*—To ascertain the Extent and Relative Influence of various sorts of Bread and other Cereals and Vegetables in producing Diabetic Sugar. *Second Series*—To determine the Influence of Animal Food, and of Mixed Diet in the production of Sugar in Diabetes. *Third Series*—To ascertain how far the Elimination of Sugar is influenced by certain Stimulants. *Fourth Series*—To determine the Influence of certain Remedies on the Elimination of Diabetic Sugar. *Fifth Series*—Other Experimental Researches to determine—(1.) The relation which the Sugar bears to the Urea in Diabetic Urine; (2.) The relation which the entire Fluids taken as food and drink bear to the amount of Water passed; (3.) The relation of Specific Gravity to amount of Sugar in Diabetic Urine.

Professor Rutherford congratulated Dr Smart on the value and interest of his communication. His elaborate observations on the influence of different kinds of bread and other articles of diet on the production of sugar in diabetic persons would no doubt be found very valuable in the treatment of the affection. To him as a physiologist, it was of special interest to have had so clearly shown that sugar and starch are virtually poisons to diabetics. When Dr Smart stated that for every grain of sugar given in the food two or even three grains of sugar were excreted in the urine, and for every grain of starch about a grain and a half of sugar appeared in the urine of diabetics, he indicated that the arrival of sugar in the hepatic cell of a diabetic stimulates in a remarkable degree the pathological process in the cell whereby proteids are wasted by being broken up into sugar and urea, and so thrown away. He had clearly shown the necessity for avoiding whatever could stimulate that morbid process. At the same time, he wished Dr Smart would make observations on the influence of iridin, euonymin, benzoate and salicylate of soda, and other stimulants of the biliary function of the liver in diabetics. Of course they knew that the biliary and glucogenic functions of the liver were very different; still, it would be of scientific interest to know whether or not the pathological glucogenic function of the liver is increased or not by agents that stimulate the biliary function of the hepatic cell.

Dr Smart, replying to Professor Rutherford's observations, said that the urea as well as the sugar had been carefully estimated, and that the results would appear in a future communication. He thanked Professor Rutherford for suggesting a trial of liver stimulants. He would certainly give the remedies named a careful trial.

3. *Dr David Wallace* requested that his paper on CYSTOSCOPY, NOTES FROM AN EXPERIENCE OF FIFTY CASES OF CYSTOSCOPIC EXAMINATION, might be held as read. The Society agreed. The paper appears at page 324 of this Journal.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS IN EDINBURGH.

The Royal College of Physicians of Edinburgh, The Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, have made arrangements by which, after one series of Examinations, held in Edinburgh or in Glasgow, or in Edinburgh and Glasgow, the Student may obtain the Diplomas of the Three Co-operating Bodies.

The object of the Joint Examination is to give to Students facilities for obtaining, after one series of Examinations, the Qualifications in Medicine and Surgery of the three Scottish Corporations. Students passing the Final Examination, which is a qualifying Examination under the Medical Act, 1886, and entitles the holder to practise Medicine, Surgery, and Midwifery, will be enabled to register three Diplomas under the Medical Acts, viz.—Licentiate of the Royal College of Physicians of Edinburgh, Licentiate of the Royal College of Surgeons of Edinburgh, and Licentiate of the Faculty of Physicians and Surgeons of Glasgow.

Female Candidates are admitted to the Examinations for this Qualification equally with male candidates; and throughout these Regulations the masculine pronoun is to be read as standing for Candidates irrespective of sex.

The three Co-operating Bodies grant their *Single* Qualifications only to Candidates who already possess another and opposite Qualification in Medicine or Surgery, as the case may be. Thus the Royal College of Physicians of Edinburgh may grant its Licence on Examination to Candidates already possessed of a recognised British, Irish, Indian, or Colonial Qualification in Surgery, and the Royal College of Surgeons of Edinburgh, and the Faculty of Physicians and Surgeons of Glasgow, may each grant its Licence on Examination to Candidates already Licentiates in Medicine of any British, Irish, or Colonial College whose Preliminary Examination and course of Professional Study is proved to be sufficient, or Graduates in Medicine of any British, Irish, Indian, or Colonial University. Copies of the Regulations for the Single Qualification of any of the Bodies may be had on application to the respective Secretaries.

N.B.—Under the provisions of the Medical Act of 1886, these *Single* Qualifications do not confer the right to registration, but may be registered as additional Qualifications by those already on the Register.

GENERAL REGULATIONS.

Candidates who commence medical study before 1st January 1892 shall be subjected to three Professional Examinations, herein called the First Examination, the Second Examination, and the Final Examination, to be conducted at separate times, partly in writing, and partly practically and orally. The Regulations applicable to Candidates who commence study after that date are not yet issued.

Opportunities of entering for each of these Examinations will be presented six times in each year—four times in Edinburgh and twice in Glasgow. A Candidate at any of these Examinations may present himself either in Edinburgh or Glasgow, irrespective of the place at which he may have previously been examined.

Candidates who are unsuccessful, either at the First, the Second, or the Final Examination, shall be remitted to their studies for a period to be determined by the judgment of the Examiners, but not in any case less than three months.

Candidates may enter for all the subjects of an Examination at one time, or may enter for and pass in any division of subjects thereof.

A Candidate may obtain an absolute Pass in any subject of the First, the Second, or the Final Examination, on his obtaining in the examination on the subject as a whole not less than 55 per cent. of the marks, although he may at the same time fail in other subjects. In such a case a Record shall be made of the subject or subjects passed, and the Candidate shall be exempt from re-examination in them.

Applicants for admission to any of the Examinations are required, on entering, to lodge with the Inspector of Certificates a schedule (forms for which are supplied) showing the Courses he has attended qualifying for admission.

No Candidate can be held to be entered for any Examination till he has sent in the proper schedule, proved his course of study, and paid the appropriate fee.

At the Oral Examinations Candidates shall be examined as far as possible in the order of their entry.

The subjects of the Second Professional Examination should, as far as possible, be studied only after the First Examination has been passed; and similarly, the subjects of the Final Examination should, as far as possible, be studied only after the Second Examination has been passed. By adhering to this course the student will have his attention occupied by preparing for only one Examination at a time.

Candidates, qualified by having attended the necessary courses of study, may however enter for two or more Examinations, to be passed successively at the same period, the condition being that failure to pass in all the subjects of any Examination precludes the Candidate from admission to the succeeding Examination. The necessary Schedule and Certificates must be lodged, and the fees for these respective Examinations paid, at the period of entering for the earliest of them. In the event of failure, the fee paid for any subsequent Examination to which a Candidate had been thereby precluded from admission to the Examination will be returned to the Candidate.

No Candidate shall be admissible to Examination who has been rejected by any other Licensing Board within the three preceding months.

The following are the Names and Addresses of the Inspectors of Certificates :— In Edinburgh:— Mr James Robertson, Solicitor, 1 George Square. In Glasgow :—Mr Alexander Duncan, B.A., Faculty Hall, 242 St Vincent Street.

The following are the General Medical Council's Requirements for the Preliminary Examination of Medical Students :—

All Medical Students must register in the Medical Students' Register of the General Medical Council before they can be admitted to any Professional Examination. Whenever they have passed the Preliminary Examination in the required subjects, and commenced Medical Study at a recognised Medical School, or at a recognised University or Teaching Institution where subjects of the Medical Course are taught, they should register not later than fifteen days from the commencement of study, and should not neglect this requirement.

Students who commence Medical Study before January 1st, 1892, shall have previously passed (at one or more Examinations) in the subjects of General Education, as follows :—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Elements of Mathematics, comprising (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the first book of Euclid, with easy questions on the subject-matter of the same; 4. Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics; 5. One of the following optional subjects :—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic; (*g*) Botany; (*h*) Zoology; (*i*) Elementary Chemistry.[1]

---

[1] Students who have passed in all the above subjects, with the exception of Mechanics, may commence study, and when they do pass in Mechanics they may be registered, and their registration antedated.

Students who commence Medical Study after January 1st, 1892, shall have previously passed in the subjects of General Education, as follows:—1. English Language, including Grammar and Composition; 2. Latin, including Grammar, Translation from specified Authors, and Translation of easy passages not taken from such Authors; 3. Mathematics, comprising (*a*) Arithmetic; (*b*) Algebra, as far as Simple Equations, inclusive; (*c*) Geometry, the subject-matter of Euclid, Books I., II., and III., with easy deductions; 4. One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic.

The entire Examination must be passed *at one time*, except in the case of Examinations passed for graduation in Arts of any of the Universities recognised, or in the case of students who have, prior to January 1st, 1892, passed in part of a recognised Preliminary Examination.

No fee is payable for Students' Registration, and Registration when once effected does not require to be repeated in any succeeding year.

Forms of application for Registration may be obtained from James Robertson, Registrar of the Branch Council for Scotland, 1 George Square, Edinburgh.

The following List of Examining bodies are recognised for registration as Medical Students, provided that in all cases the subject of Mechanics, as above set forth, be shown to have been included in the Examination:—

(1.) UNIVERSITIES OF THE UNITED KINGDOM.

Oxford.—Examination for a Degree in Arts; Responsions; Moderations; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics; and also one of the following optional subjects:—Greek, French, German.

Cambridge.—Examination for a Degree in Arts; Previous Examination; Local Examinations (Senior), Certificate to include Latin and Mathematics; Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek, French, German. Higher Local Examinations.

Durham.—Examination for a Degree in Arts; Examination for Students at the end of their first year; Examination for Certificate of Proficiency.

Oxford and Cambridge Schools' Examination Board.—Certificate to include the following subjects, an adequate knowledge of English Grammar and Orthography, as shown in the course of the Examination, to the satisfaction of the Examiners, being held as conforming to the requirements of the Medical Council in regard to those subjects:—(*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including Simple Equations; (*c*) Geometry, including the first two books of Euclid; (*d*) Latin, including Translation and Grammar; (*e*) and one of the following optional subjects:—Greek, French, German.

London.—Examination for a Degree in Arts or Science; Preliminary Scientific (M.B.) Examination; Matriculation Examination.

Victoria University.—Preliminary Examination, Latin to be one of the subjects; Entrance Examination in Arts, to include all the subjects required.

Edinburgh.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Science or Medicine and Surgery. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German.

Aberdeen.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examination (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

Glasgow.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate); Certificate to include all the subjects required.

St Andrews.—Examination for a Degree in Arts; Preliminary Examination for Graduation in Medicine and Surgery; Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects:—Greek, French, German. Local Examinations (Junior Certificate), to include all the subjects required.

Dublin.—Examination for a Degree in Arts; Public Entrance Examination; General Examination at end of Senior Freshman year.

Queen's University (Ireland)[1].—Examination for a Degree in Arts; Entrance or Matriculation Examination; Previous Examination for B.A. Degree; Local Examinations for Men and Women; Certificate to include all the subjects required by the General Medical Council.

Royal University of Ireland.—Matriculation Examination; Examination for a Degree in Arts.

(2.) OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

† *The Society of Apothecaries of London.*—Examination in Arts.

† *Royal Colleges of Physicians and Surgeons, Edinburgh.*—Preliminary (combined) Examination in General Education.

† *Faculty of Physicians and Surgeons of Glasgow.*—Preliminary Examination in General Education.

† *Royal College of Surgeons in Ireland.*—Preliminary Examination, Certificate to include Mathematics.

(3.) EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

College of Preceptors. — Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language having been taken.

Intermediate Education Board of Ireland; Junior, Middle, and Senior Grades.—Certificate in each case to include all the subjects required by the General Medical Council.

† *Queen's College, Belfast; Queen's College, Cork; Queen's College, Galway.*—Matriculation Examination.

† *St David's College, Lampeter.*—Responsions Examination to include all the subjects required.

Educational Institute of Scotland.—Preliminary Medical Examination.

† *Pharmaceutical Society of Great Britain.*—Preliminary and Minor Examinations *pro tanto.*

† *Pharmaceutical Society of Ireland.*—Preliminary Examination *pro tanto.*

Scotch Education Department.—Leaving Certificates in each Grade and in Honours.

(4.) INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

Universities of Calcutta, Madras, and Bombay.—Entrance Examination, Certificate to include Latin.

M'Gill College, and Bishop's College, Montreal; Toronto.—Matriculation Examination.

---

[1] This University was merged into the Royal University of Ireland in 1881, but Certificates previously obtained are still accepted for registration.

Trinity College, Toronto; Queen's College, Kingston; Victoria College, Upper Canada.—Matriculation Examination.

Western University of Ontario.—Entrance Examination in Medicine, Certificate to include all the subjects required for registration.

College of Physicians and Surgeons of Ontario.—Preliminary Examination, Certificate to include all the subjects required for registration.

University of Manitoba.—Previous Examination.

King's College, Nova Scotia.—Matriculation Examination; Responsions.

University of Halifax, Nova Scotia.—Matriculation Examination.

University of Fredericton, New Brunswick.—Matriculation Examination.

Mount Allison College, New Brunswick.—Examination for a Degree in Arts.

Dalhousie College and University, Halifax, Nova Scotia.—Matriculation and Sessional Examinations.

Provincial Medical Board of Nova Scotia.—Matriculation Examination.

† *University of California.*—Examination in Department of Letters.

University of Melbourne.—Matriculation Examination.

University of Sydney.—Matriculation Examination.

University of the Cape of Good Hope. — Matriculation Examination; Examination for a Degree in Arts.

University of Adelaide.—Matriculation Examination or its substitute, the Senior Public Examination, Junior Public Examination, Certificate to include all the subjects required for registration.

Codrington College, Barbados.—English Certificate for Students of two years' standing, and Latin Certificate, or "Testamur."

Tasmanian Council of Education.—Examination for the Degree of Associate of Arts, Certificate to include Latin and Mathematics.

Christ's College, Canterbury, New Zealand.—Voluntary Examinations, Certificate to include all the subjects required by the General Medical Council.

University of New Zealand.— Entrance Examination.

University of Otago, New Zealand.—Preliminary Examination.

Ceylon Medical College.—Preliminary Examination (Primary Class).

Germany and other Continental Countries.—Gymnasial, Abiturienten-Examen, and other Corresponding Entrance Examinations to the Universities.

† *Gymnasia of the Circuit of Dorpat.*—Examinations of Maturity.

Note.—The General Medical Council will not accept Certificates from the above Boards marked †, except in the case of students who prior to 1st January 1892 shall have passed any part of their Preliminary Examination before these Boards.

The following pages contain a tabular abstract of the regulations of the various Licensing Boards, as well as a list of the Hospitals, Dispensaries, etc., attached to our Edinburgh Medical Schools; also the regulations for the Army, Indian, and Navy Medical Services. The space at our disposal does not allow of more detailed information. But, in point of fact, the regulations of all Licensing Boards now correspond much more closely than they used to do, and the regulations of the General Medical Council afford a key to the general requirements of all of them. For special information, application should always be made to the Secretaries of the Licensing Boards; or, in the case of the Universities, recourse may be had to the published Calendars.

The *Preliminary Examinations* are usually held before the commencement, and at the end, of the Winter Session,—viz., in October, March, or April—sometimes also at the end of the Summer Session. The Professional Examinations in Universities are usually after the Winter and during the Summer Sessions; in Edinburgh, however, the first Professional is held in October as well as April. The other Licensing Boards' examinations are held at various periods throughout the year. Special examinations, under circumstances of urgency, can be held at almost any time; but they, of course, entail considerable addition to the expense.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology or Institutes of Medicine.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	
Edinburgh University, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	3 mo.,‡ or 6 cas.	6	
University of Glasgow, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3		3	3	3	6	6	24	do.	6	
University of St Andrews, M.B. & C.M., .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
London University, M.B., ...	21	6	12	6	1 crs.	1 crs.	6	6	6	1 crs.	1 crs.	1 crs.			1 crs.	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D., . .	21												3								
Dublin University, M.B., ...		6	6	6	3	3	3	6	6	6	3		3				9	24	6 mo.		
" " Surgical Diploma, .		12	18	6	3	6	18	12	6	6	3		3			27	27	27			
The Queen's University of Ireland, M.D.,		12	12	6	3	6	12	6	6	6	3		3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London, .	21	12	12	6	3	3	12	6	12	3	3	6	3		3	9	9	24	20 cas.		
Royal College of Physicians, Edinburgh,	21	6	6	6	3	3	6	6	6	3	3	3	3		3	3	6	24	6cases		
King and Queen's Col. of Phys. Ireland, .	21	6	12	6	6	6	6	6	6	6	6		6			6	21	27	6 mo.		
Royal College of Surgeons, London,* . .	21	12	12	6		3	12*	12	6	3					3	27*	9*	33			Cert.
Royal College of Surgeons, Dublin, . .	21	18	18	6	6	3	18	18	6	3	3					18	9	27			
Royal College of Surgeons, Edinburgh, .	21	12†	12	6	3	3	6	6†	6	3	3	3			3	9†	6	24	6 cas.	6	Cert.
Faculty of Phys. and Surgeons, Glasgow,	21	12	12	6	3	3	3	6 or 12	6	3	3				3	6 or 12	6	24	6 cas.		
For Triple Qualification by Royal Colleges of Phys. and Surgs. of Edinburgh, and Faculty of Phys. and Surgs. of Glasgow, ...	21	6	12	6	3	3	6	6	6	3	3	3			3	9	9	24	6 cas.	6	Cert.
Apothecaries' Hall, England, ...	21	12	6	6	3	3	6		12	3	3	6	3		Appr.		27	27	20 cas.		9 mo.
" " Ireland, ...	21	6	12	6	3	3	6	6	6	6	3		3		Appr.	9	18	27	20 cas.		

English Poor-Law Board.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.

---

* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months Hospital.

† Or Candidates may take six months Lectures and eighteen months Dissections. A third Course of Surgery is required, but it may be either Principles and Practice of Surgery or Clinical Surgery.

‡ In lieu of the above, the University of Edinburgh requires, as an alternative, attendance on at least Twelve Cases of Labour under the superintendence of a registered Medical Practitioner.

MEDICAL SCHOOLS OF SCOTLAND, 1891–92.

WINTER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLL. MED. SCHOOL, GLASGOW.	ST MUNGO'S COLLEGE, GLASGOW.	WESTERN MEDICAL SCHOOL, GLASGOW.	UNIVERSITY OF ABERDEEN.	UNIVERSITY OF ST ANDREWS.
Anatomy, Systematic and Practical, with Demonstrations.	Prof. Sir W. Turner.	Dr J. Symington and Mr Macdonald Brown.†	Professor Cleland.	Dr A. M. Buchanan.	Prof. Clark and Demonstrators.	...	Professor Reid.	Prof. Paterson, Dundee.
Physiology, or Institutes of Medicine.*	Professor Rutherford.	Mr James Hunter & Dr N. Paton.†	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. John Barlow.	...	Professor M'William.	Prof. Pettigrew, St Andrews, Prof. Reid, Dundee.
Chemistry, and Practical Chemistry.	Professor C. Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr. R. Paterson, Dr Aitken, and Dr Readman.	Professor J. Ferguson.	Professor J. Robertson Watson.	Professor James M. Milne.	A. B. Robertson	Prof. Japp.	Professor Purdie, St Andrews, Professor Frankland, Dundee.
Materia Medica & Therapeutics.	Prof. T. R. Fraser.	Drs Craig & Stockman.†	Professor Charteris.	Dr Napier.	Prof. John Dougall.	...	Professor Cash.	...
Practice of Medicine.	Professor Grainger Stewart.	Drs Wyllie, James, Affleck, Bramwell, G.A.Gibson, and Philip.†	Professor Gairdner.	Dr S. Gemmell.	Professor Robertson.	Dr Cowan Lees.	Professor Findlay.	...
Surgery.	Professor Chiene.	Dr MacGillivray, Mr Cathcart, Mr Caird, & Mr Hodsdon.	Professor Sir G. H. B. Macleod.	Dr Dunlop.	Prof. Knox.	R. H. Parry.	Professor A. Ogston.	Dr MacEwan, Dundee.
Midwifery, etc.	Professor Simpson.	Drs Milne Murray and Matheson.	Professor Leishman.	W. L. Reid.	Prof. Stirton (in Summer).	Drs J. Stuart Nairne and H. St Clair Gray.	Professor Stephenson.	...
Natural Philosophy.	Professor Tait.	...	Prof. Sir W. Thomson.	...	...	...	Prof. Niven.	Prof. Butler, St Andrews, Prof. Steggall, Dundee.
Natural History, and Practical Natural History.	Professor Cossar Ewart.	Mr J. Arthur Thomson.	Professor Young.	...	Prof. E. E. Prince.	...	Professor A. Nicholson.	Prof. M'Intosh. St Andrews, Prof. Thompson, Dundee.
Practical Botany, Advanced and Elementary.	Professor Bayley Balfour.	...	...	Prof. King.	Dr Swanson.	...	...	Prof. Geddes, Dundee, Mr Robertson, St Andrews.
General and Practical Pathology.	Professor Greenfield.	Dr A. Bruce and Dr W. Russell.	Dr J. Coats, Lecturer.	At Royal or Western Infirmary.	Dr J. L. Steven.	At Western Infirmary.	Professor Hamilton.	...
Clinical Medicine.	Professors G. Stewart, T.R. Fraser, Greenfield, and Simpson on Diseases of Women.	Drs Brakenridge, Wyllie, Affleck, and H. Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. M'Vail and Physicians of the Royal Infirmary.	Physicians of the Western Infirmary.	Drs Fraser and Blaikie Smith.	Drs J. B. Macleod and A. M. Stalker, Dundee.
Clinical Surgery.	Professor Annandale.	Mr Duncan and Mr Miller.†	Prof. George Buchanan and Prof. Macleod.	Surgeons of the Royal or Western Infirmary.	Prof. Macewen and Surgeons of the Royal Infirmary.	Surgeons of the Western Infirmary.	Drs Ogston, Garden, and Booth.	Drs MacEwan and Steele Moon, Dundee.
Medical Jurisprudence and Public Health	Prof. Sir Douglas Maclagan.	Dr Littlejohn.	...	Public Health—Dr Christie	Professor Glaister and Dr M'Vail.‡	In Summer.	In Summer.	...

In connexion with the University of Edinburgh, during the Winter Session classes of Practical Materia Medica (including Pharmacy), Practical Pathology, and Practical Hygiene are taught by the Professors of these subjects and their Assistants; lectures and clinical nstruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr James Carmichael and Dr Playfair; and on Comparative Embryology by Mr George Brook.

Lectures are given in the School of Medicine, Edinburgh, during the Winter Session on the Diseases of the Ear by Dr Kirk Duncanson; on Botany by Mr M'Alpine; on Diseases of the Ear and Throat by Dr P. M'Bride; on Diseases of the Eye by Mr George Berry; on Diseases of he Skin by Dr Allan Jamieson; on Diseases of Children by Mr J. Bell and Dr Burn Murdoch; on Infancy and Childhood by Drs John Thomson and J. W. Ballantyne; on Diseases of the Chest by Dr Philip; on Vaccination by Drs Husband and Buist: on Diseases of the Tropics and Climatology by Dr Felkin; on Systematic Gynæcology by Dr Halliday Croom; and on Practical Midwifery and Clinical Gynæco-ogy by Drs P. Young, Berry Hart, and Brewis.

There are Special Classes for Women on Chemistry, Anatomy, Practice of Physic, Surgery, Institutes of Medicine, Physiology, Pathology, Clinical Medicine, Clinical Surgery, Diseases of Children, Vaccination, Diseases of the Tropics and Climatology, Practical Gynæcology, and Natural History. In connexion with the University of Glasgow, Dr Yellowlees lectures on Mental Diseases, and Dr T. Reid on Diseases f the Eye, both in Summer. Practical Physiology is taught by the respective Professors during the Winter and Summer Sessions in Edin-urgh, and in Summer at Glasgow and Aberdeen. Practical Surgery is taught during the Winter Session in the University of Aberdeen by Professor Ogston and Assistant.

Lectures are given in St Mungo's College, Glasgow, during the Winter Session, on Advanced Embryology by Prof. Prince; on Gynæcology by Dr Kelly; on Ophthalmology by Prof. Wolfe; and on Diseases of the Throat and Nose by Dr Newman.

Lectures are given in Anderson's College Medical School during the Winter Session, on Ophthalmic Medicine and Surgery by Dr Meighan, nd on Diseases of the Throat and Nose by Dr John Macintyre. In the Western Medical School Dr A. Brown Kelly lectures in Winter on Diseases of the Throat and Nose.

Clinical Instruction in Mental Diseases is given in connexion with University College, Dundee, by Dr Rorie, Royal Asylum, Dundee.

* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools. Special schedules are ssued by the London Boards for their Scotch students, which should always be inquired for.

† These are not conjoint courses, but separate ones by the gentlemen named.

‡ This is a joint course.

MEDICAL SCHOOLS OF SCOTLAND, 1892.

SUMMER SESSION.

Subjects.	University of Edinburgh.	School of Medicine, Edinburgh.	University of Glasgow.	Anderson's College Medical School, Glasgow.	St Mungo's College, Glasgow.	Western Medical School, Glasgow.	University of Aberdeen.
Practical Anatomy and Demonstrations.	Prof. Sir Wm. Turner.	Dr J. Symington and Mr M. Brown.*	Professor Cleland.	Dr A. M. Buchanan.	Prof. Clark and Demonstrators.	...	Professor Reid.
Botany.	Professor Bayley Balfour.	Mr A. N. M'Alpine.	Professor F. O. Bower.	Prof. King.	Dr James Swanson.	...	Professor Trail.
Materia Medica and Therapeutics and Practical Materia Medica.	Prof. T. R. Fraser.	Dr Craig and Dr Stockman.*	Professor Charteris.	Dr Napier.	Professor Dougall (in Winter).	...	Professor Cash.
Obstetrical and Gynecological Operations.	Professor Simpson.	Drs Croom, B. Hart, and F. Barbour.*	Professor Leishman.	Dr W. L. Reid.	Prof. James Stirton.	Drs J. Stuart Nairne and H. St Clair Gray.	Prof. W. Stephenson.
Medical Jurisprudence and Public Health.	Professor Sir Douglas Maclagan.	Dr Littlejohn.†	Professor Simpson.‖	Dr T. Kennedy Dalziel.	Prof. Glaister and Dr M'Vail.‡	Dr P. Caldwell Smith.	Professor M. Hay.
Practical Anatomy.	Prof. Sir Wm. Turner.	...	Professor Young.	...	Prof. E. E. Prince.	...	...
Practical Physiology, incl. Histology.	Professor Rutherford.	Mr J. Hunter and Dr Noël Paton.	Professor M'Kendrick.	Dr D. Campbell Black.	Prof. Barlow.	...	Professor M'William.
Practical Pathology, incl. Histology.	Professor Greenfield.	Dr A. Bruce and Dr W. Russell.	Dr Joseph Coats.	At Royal or Western Infirmary.	Dr J. L. Steven.	At Western Infirmary.	Professor Hamilton
Organic and Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Mr R. Paterson, Dr A. P. Aitken, and Dr Readman.*	Professor J. Ferguson.	Professor J. Robertson Watson.	Professor James M. Milne.	A. B. Robertson.	Professor Japp.
Operative Surgery and Surgical Anatomy.	Professor Chiene.	Dr C. W. MacGillivray, Mr C. W. Cathcart, Mr Caird, and Mr Hodsdon.*	Professor Sir G. H. B. Macleod.	Dr Dunlop.	Dr Whitson.	R. H. Parry.	Professor A. Ogston.
Mental Diseases.	Dr Clouston.	Dr J. B. Tuke.	Dr Yellowlees.	...	Dr A. C. Clark.	...	Dr Reid.
Natural History.	Professor Cossar Ewart.	Mr J. Arthur Thomson.	Professor Young.	...	Prof. E. E. Prince (in Winter).	...	Professor Nicholson.
Clinical Medicine.	Professors G. Stewart, T. R. Fraser, Greenfield, and Simpson on Diseases of Women.	Drs Brakenridge, Wyllie, Affleck, and H. Croom for Diseases of Women.‡	Prof. M'Call Anderson and Prof. Gairdner.	Physicians of the Royal or Western Infirmary.	Prof. M'Vail and Physicians of the Royal Infirmary.	Physicians of Western Infirmary.	...
Clinical Surgery.	Professor Annandale.	Mr Duncan and Mr Miller.	Prof. George Buchanan and Prof. Macleod.	Surgeons of the Royal or Western Infirmary.	Professor Macewen & Surgeons of the Royal Infirmary.	Surgeons of West. Infirmary.	...

In connexion with the University of Edinburgh during the Summer Session, classes of Practical Botany, Practical Natural History, and Practical Hygiene, are taught by the Professors of these subjects and their Assistants; lectures and clinical instruction on Diseases of Children, at Royal Hospital for Sick Children, are given by Dr J. Carmichael and Dr Playfair; on Diseases of the Eye by Dr D. Argyll Robertson; and on Comparative Embryology by Mr George Brook.

In connexion with St Mungo's College, during the Summer Session, Dr Adams will lecture on Surgical Diseases of Children, and Dr Black on Medical Diseases of Children; Dr Macfie on Otology; Dr Provan on Dermatology; and Dr Workman on Bacteriology.

In connexion with Anderson's College Medical School, during the Summer Session Dr Meighan will lecture on Ophthalmic Medicine and Surgery; Dr Barr on Aural Surgery; and Dr Macintyre on Diseases of the Throat and Nose.

In Aberdeen, Special Courses of Instruction are given during the Summer Session on Insanity, Diseases of Children, of the Eye, Ear, and Throat, of the Skin, and in Fevers (City Hospital).

* These are not conjoint courses, but separate ones by the gentlemen named.

† Dr Littlejohn gives courses during both the Winter and Summer Sessions.

‡ This is a joint course. ‖ In Winter.

⁂ For additional Summer Courses on special subjects, see the Prospectus of each School.

In connexion with the Summer Session of the Medical Schools in Scotland, instruction in Vaccination is given at the Royal Public Dispensary, Edinburgh, both Summer and Winter, by Dr Husband; and in the Western Dispensary and Cowgate Dispensary, by Dr Buist; at the Faculty Hall, Glasgow, on Mondays at 2, by Dr Thomson; and at the Royal Infirmary, Glasgow, on Mondays and Thursdays at 12 o'clock, by Dr Thomson.

Medical Psychology and Insanity are taught in Summer by Dr Clouston and Dr J. B. Tuke in Edinburgh, in Glasgow by Dr Yellowlees and Dr A. C. Clark, and in Aberdeen by Dr Reid.

Practical Medicine and Physical Diagnosis by Dr James, Dr Gibson, Dr Byrom Bramwell, and Dr Philip in Edinburgh.

Diseases of Children by Mr J. Bell and Dr Burn Murdoch in School of Medicine, Edinburgh; in St Mungo's College by Drs Black and Adams, Glasgow; by Prof. Stephenson at Children's Hospital, Aberdeen.

Diseases of Infancy and Childhood by Dr John Thomson, Dr J. W. Ballantyne, and Dr Melville Dunlop, in School of Medicine, Edinburgh.

Diseases of the Chest by Dr R. W. Philip in School of Medicine, Edinburgh.

Diseases of the Eye by Mr George Berry in School of Medicine, Edinburgh, Dr M'Kenzie Davidson in Aberdeen, and by Dr Thomas Reid, Dr Meighan, and Prof. Wolfe in Glasgow.

Diseases of the Ear by Dr Kirk Duncanson in School of Medicine, Edinburgh; and of the Ear by Dr Johnston Macfie and Dr Barr in Glasgow; of the Nose and Throat by Dr A. Brown Kelly in Glasgow; and in Aberdeen, Ear and Larynx Diseases by Dr M'Kenzie Booth.

Diseases of the Throat and Nose by Dr Newman and Dr John Macintyre in Glasgow.

Diseases of the Skin by Dr Allan Jamieson in School of Medicine, Edinburgh, and in Aberdeen by Dr Garden, and in Glasgow by Dr Provan.

Dental Surgery by Dr J. C. Woodburn in Glasgow, and Dr Williamson in Aberdeen.

Laryngology and Medical Ophthalmology in Edinburgh by Dr John Wyllie.

Diseases of the Tropics and Climatology in Edinburgh by Dr R. W. Felkin.

Lectures on Public Health are delivered during the Summer Session in Aberdeen by Professor Hay; in School of Medicine, Edinburgh, by Dr Littlejohn; in Glasgow by Dr P. Caldwell Smith, and by Prof. Glaister and Dr J. C. M'Vail.

Systematic Gynæcology in School of Medicine, Edinburgh, by Dr Brewis; and in St Mungo's College, Glasgow, by Dr Kelly.

Clinical Gynæcology and Practical Midwifery in School of Medicine, Edinburgh, by Drs Croom, Young, and Brewis.

Special Courses on all subjects for Women in School of Medicine, Edinburgh, during the Summer Session, qualifying for Medical and Surgical Diplomas.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION WITH THE MEDICAL SCHOOLS OF EDINBURGH.

EDINBURGH.

Royal Infirmary, including Lock Hospital. 680 Beds and 30 Cots. Visits daily from 11 till 2 p.m. Consulting Physicians, Dr George W. Balfour and Professor Sir Douglas Maclagan; Dr Alexander Keiller (for Diseases of Women). Physicians, Professors Grainger Stewart, Fraser, and Greenfield; Drs Claud Muirhead, D. J. Brakenridge, John Wyllie, and J. O. Affleck; Professor Simpson and Dr J. Halliday Croom (for Diseases of Women). Assistant Physicians, Drs Andrew Smart, Alex. James, Byrom Bramwell, George A. Gibson, Alexander Bruce, and R. W. Philip; Drs D. Berry Hart and A. H. F. Barbour (for Diseases of Women). Extra Physician, Dr Allan Jamieson (for Diseases of the Skin). Consulting Surgeons, Dr Gillespie, Dr P. H. Watson, and Mr Joseph Bell. Consulting Dental Surgeon, Dr John Smith. Surgeons, Professors Annandale and Chiene, Mr John Duncan, Mr A. G. Miller, and Dr P. H. Maclaren. Assistant Surgeons, Drs

Chas. W. MacGillivray, J. M. Cotterill, Chas. W. Cathcart, Francis M. Caird, J. W. B. Hodsdon, and J. Shaw M'Laren; Ophthalmic Surgeons, Dr Argyll Robertson and Mr George A. Berry. Surgeon to the Ear and Throat Department, Dr P. M'Bride. Assistant Ophthalmic Surgeons, Dr George Mackay and W. George Sym. Assistant Surgeon to the Ear and Throat Department, Dr R. M. Johnston. Dental Department, Surgeons of the Edinburgh Dental Hospital and School. Pathologists, Dr William Russell and Mr W. H. Barrett.

CONVALESCENT HOUSE, Corstorphine. Surgeon, Mr Cotterill. Extra Surgeon, Mr Alex. Matthew.

CHALMERS HOSPITAL FOR THE SICK AND HURT (Public and Private Wards). 40 Beds for medical and surgical patients. In Private Wards the patients are charged 5s. per diem for board. Physician, Dr George W. Balfour. Surgeon, Dr P. H. Watson. Resident Medical Officer, Ronald P. Mackenzie, M.B., C.M. Secretary, J. Wilson Brodie, C.A., 13 Queen Street.

ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL. 30 Beds; about 300 in-patients and 700 out-patients yearly. Consulting Physicians, Drs Moir, Graham Weir, and Keiller. Consulting Surgeon, Professor Annandale. Physicians, Professor Simpson, Drs Halliday Croom, Underhill, and Berry Hart. Assistant Physicians, Drs Freeland Barbour and Milne Murray. Secretary and Treasurer, Andrew Scott, C.A.

ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN. 80 Beds; number of patients for 1890, 7811. Consulting Physicians, Dr Graham Weir, Dr Geo. W. Balfour, Dr R. Peel Ritchie, and Professor T. Grainger Stewart. Consulting Surgeon, Professor Annandale. Surgeon, Mr Joseph Bell. Pathologist, Dr Alexander Bruce. Ordinary Physicians, Dr James Carmichael, Dr John Playfair, and Dr Burn Murdoch. Extra Physicians, Dr G. H. Melville Dunlop, Dr John Thomson, and Dr A. S. Cumming. Surgeon-Dentist, Dr John Smith. Ophthalmic Surgeon, Dr Argyll Robertson. Resident Physicians, Drs R. D. Rudolf and H. Greville Huie. Matron, Miss Bird. Honorary Secretaries, Messrs Henry & Scott, W.S., 20 St Andrew Square.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 12,000 patients annually. Consulting Physician, Dr George Balfour. Consulting Surgeon, Dr Littlejohn. Medical Officers, Drs W. Husband, D. Wilson, Andrew, P. Young, A. Black, Dunlop, Blaikie, Webster, Wallace, Haultain, and Stiles. Consulting Physician-Accoucheur, Dr Keiller. Midwifery and Diseases of Women, Drs Andrew, Young, and Dunlop. Vaccination, Dr W. Husband. Diseases of the Ear and Throat, Dr Blaikie. Mental Diseases, Dr J. Batty Tuke, senr. Apothecary, Mr W. Duncan. Clinique daily at 3 P.M. Vaccination, Wednesday and Saturday, 12 noon. Midwifery and Diseases of Women, Tuesday and Friday, 1 P.M. Laboratory, 3 P.M. and 7 P.M. Secretary, R. C. Gray, S.S.C. James Andrew, M.D., Secretary to the Medical Officers.

NEW TOWN DISPENSARY, 17 Thistle Street. About 10,000 patients annually. Medical Officers, Drs Thyne, Dunlop, K. M. Douglas, Stockman, Miller, and Gulland. Acting Physicians-Accoucheur, Drs Wood and Ferguson. Superintendent of Vaccination, Dr Cadell. Diseases of the Ear and Throat, Dr Horsley. Diseases of the Eye, Dr Maddox. Diseases of Women, Dr Brewis. Diseases of Children, Dr Thomson. Mental Diseases, Dr Batty Tuke, jun. Clinique daily at 3 P.M. Vaccination on Tuesdays and Fridays at 12.

THE EDINBURGH PROVIDENT DISPENSARY, Marshall Street. Upwards of 9500 patients annually. Consulting Physician, Dr Andrew Smart. Consulting Surgeon, Dr Joseph Bell. Dental Surgeon, R. Urquhart. Medical Officers, Dr F. Troup, Dr A. Matheson, Dr Robertson, Dr E. Price, Dr G. Price, Dr Cullen, Dr Booth, Dr G. Mowat, and Dr J. Aitken Clark. Assistant Medical Officer, Wm. Wood, M.B., C.M. Secretary, R. Urquhart. Vaccination, Dr Wood (Tuesday and Friday at 1 o'clock). Diseases of Women and Children, Dr Matheson (Tuesday and Friday at 1 o'clock). Out-door practice and Practical Midwifery daily. Surgical Instrument Maker, A. Young, Forrest Road. Janitor, T. Johnstone. Attendance at this Institution qualifies for the University of Edinburgh, the other Universities, and the Royal Colleges of Physicians and Surgeons.

WESTERN DISPENSARY, Chalmers Institute, Ponton Street, Fountainbridge. Chairman, James Simson. Acting Committee, Miss Chalmers, Miss M. Douglas, Mrs Owen, S. Henderson, Stair Kerr, Dr Bruce Bremner, A. Dickison, Dr Pringle, A. M'Lellan. Consulting Physician, Dr A. Peddie. Consulting Surgeon, Dr Joseph Bell. Consulting Physician for Diseases of Women, Dr Croom. Physicians, Drs Murdoch Brown and Home Ross. Assistant Physicians, Drs Thin and Fleming. Surgeon, Dr Alexis Thomson. Diseases of the Throat, Dr Hunter Mackenzie. Diseases of Women, Dr Ballantyne. Vaccination Officer, Dr J. B. Buist. Midwifery, Dr Barbour. Diseases of the Eye, vacant. Dispenser, Forrester Kennedy. Secretary to Medical Board, Dr J. Murdoch Brown. Treasurer, James Simson, 51 Manor Place. Open daily from 3.45 to 4.45 P.M. Diseases of Women, Monday, 4.45 P.M. Diseases of Throat and Ear, Monday, 4 P.M. Vaccination, Thursday, 3 P.M. Special Surgical Cases, Wednesday, 4 P.M. Diseases of the Eye, Thursday, 4 P.M.

ROYAL ASYLUM FOR THE INSANE. About 850 patients, over 300 of whom are private patients. Physician, Dr Clouston.

EYE, EAR, AND THROAT INFIRMARY, 6 Cambridge Street, Lothian Road, Edinburgh. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Surgeons, J. J. Kirk Duncanson, M.D., F.R.C.P.E., G. Hunter Mackenzie, M.D., William George Sym, M.D., and Alexander Black, M.D. Eye Clinique daily at 1 P.M. Ear Clinique on Mondays, Thursdays, and Saturdays, at 12 noon. Throat Clinique on Tuesdays and Fridays at 4 P.M.

EYE DISPENSARY OF EDINBURGH, 31 Chambers Street. About 1500 patients annually. Surgeons, Mr Berry and Mr Caverhill. Assistant Surgeon, Dr Mackay. Open Mondays, Wednesdays, and Fridays, at 1 P.M. Clinical Instruction is given in the Diagnosis and Treatment of Diseases of the Eye (including minor operations) by the Surgeons in charge. Fee for three months' course, £1, 1s.

DENTAL HOSPITAL AND SCHOOL, 5 Lauriston Lane. Consulting Physician, Alexander Peddie, M.D., F.R.C.P.E. Consulting Surgeon, Joseph Bell, F.R.C.S.E. Consulting Dental Surgeon, John Smith, M.D., LL.D., F.R.C.S.E. Lecturers, Messrs Andrew Wilson, W. Bowman Macleod, and G. W. Watson. Dental Surgeons, W. Bowman Macleod, A. Wilson, M. Macgregor, G. W. Watson, J. S. Durward, James Mackintosh, and W. Forrester. Assistant Dental Surgeons, John S. Amoore, J. G. Munro, John Turner, David Monroe, F. Page, and T. Gregory. Extra Assistants, F. L. F. Masters, L.D.S., and Sewill Simmons, L.D.S. Tutorial Dental Surgeon, H. B. Ezard. Chloroformists, William Keiller, L.R.C.P. & S.E., J. M. Farquharson, M.B., C.M., W. Lundie, M.B., C.M., B.Sc., and Mathieson Cullen, M.B., C.M. Dean, W. Bowman Macleod. Hon. Treasurer, Thomas Wallace, 87 Princes Street. Hon. Secretary, Lindsay Mackersy, W.S., 3A North St David Street. Daily, 9 to 10 A.M. Average number of patients, 8000 per annum.

ARMY MEDICAL DEPARTMENT.

WAR OFFICE, LONDON.

SCHEDULE OF QUALIFICATIONS NECESSARY FOR CANDIDATES DESIROUS OF OBTAINING COMMISSIONS IN THE ARMY MEDICAL STAFF, WITH THE CONDITIONS OF SERVICE.

APPOINTMENT.

1. Every candidate for a commission in the Army Medical Staff must be 21 years and not over 28 years of age at the date of commencement of

the competitive examination. He must produce an extract from the register of his birth, or, in default, a declaration, made before a magistrate by one of his parents or guardians, giving his exact age. He must also produce a recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in *every* respect to prove creditable to the Department if a commission be granted; and a certificate of moral character from the parochial clergyman, if possible.

2. He must possess two diplomas or licenses, recognised by the General Medical Council, one to practise Medicine and the other Surgery, and must be registered under the Medical Act in force in the United Kingdom at the time of his appointment. A candidate, however, who holds a single diploma from the Society of Apothecaries, obtained under the conditions of the Act of 1886, will be deemed to possess the double qualification required.

3. The candidate must sign a declaration upon honour that both his parents are of unmixed European blood, and that he labours under no mental or constitutional disease, or hereditary tendency thereto, nor any imperfection or disability that can interfere with the efficient discharge of the duties of a medical officer in any climate: also that he does not hold, and has never held, any commission or appointment in the public services.

4. His physical fitness will be determined by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to pass the tests laid down by Regulations. The Board must also certify that he is free from organic or other disease, and from constitutional weakness, or other disability of any kind likely to unfit him for military service in any climate.

Certificates of age, registration of diplomas, etc., and of character, must accompany the declaration when signed and returned.

5. A public and open competition will be held twice in the year for the admission of qualified candidates as probationers. The number of appointments so competed for will be not less than half of the number of vacancies which shall have arisen in the last completed half-year ending on the 30th June or 31st December. It will be competent for the Secretary of State for War to fill up the remaining number from such qualified candidates as may be proposed by the governing bodies of Public Schools of Medicine in the United Kingdom or in the Colonies as he may think proper. Every candidate so proposed must be certified by the governing body proposing him to be duly qualified according to a standard laid down by the Secretary of State, and shall be approved by the Director-General.

The Secretary of State reserves the right of rejecting any candidate who may show a deficiency in his general education, as evinced by bad spelling or composition.

An entrance fee of £1 is required from each candidate admitted, and is payable at the conclusion of his physical examination, if pronounced fit.

6. The Secretary of State for War will from time to time fix the order of precedence and the proportion in which the several Schools of Medicine shall be offered the nomination of candidates.

No candidate will be allowed to compete on more than two occasions.

7. A Surgeon on probation, on being so nominated, will be sent to some large station for instruction in Ambulance and Medical Staff Corps duties, until the commencement of the next course of study at the Army Medical School, when he will go through such course as the Secretary of State shall decide. After passing a qualifying examination in the military medical subjects taught there, and satisfying the Director-General that he is a person of proper skill, knowledge, and character, for permanent appointment in the Army Medical Staff, the Surgeon on probation will be commissioned as Surgeon.

The Surgeons on probation who pass out of the Army Medical School at one qualifying examination will take precedence among each other as Surgeons, as follows:—(*a.*) Those appointed on nomination according to their date of joining on probation. (*b.*) Those appointed by competition according to the last day of the competitive examination, and in the order of merit, as determined by the combined results of the competitive and qualifying examinations, with priority over any joining under paragraph (*a*) on the last day of the competitive examination. Their commissions will bear the date of the day of their passing out of the Army Medical School.

EXAMINATIONS.

1. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—*a.* Anatomy and Physiology, 1000; *b.* Surgery, 1000; *c.* Medicine, including Therapeutics and the Diseases of Women and Children, 1000; *d.* Chemistry and Pharmacy, and a practical knowledge of drugs, 1000. [*N.B.*—The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.] No candidate shall be considered eligible for the Army Medical Staff who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

2. Voluntary subjects for examination. Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be—French and German (150 each), 300; Natural Sciences, 300. A number less than one-third of the marks obtainable in each of these voluntary subjects will not be allowed to count in favour of the candidate who has qualified in the compulsory subjects. The knowledge of Modern Languages being considered of great importance, all intending competitors are urged to qualify in French and German. The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

After passing this examination, every successful candidate will be required to attend one course of practical instruction at the Army Medical School as a Surgeon on probation on—(1) Hygiene; (2) Clinical and Military Medicine; (3) Clinical and Military Surgery; (4) Pathology of Diseases and Injuries incident to Military Service.

All Surgeons on probation will be required to conform to such rules of discipline as the Senate may from time to time enact, and provide themselves with uniform, viz., the regulation undress and mess uniform of a surgeon, but without sword.

They will be required to attend the Medical Staff Mess at Netley, and to conform to the Rules and Regulations thereof.

RANK AND PAY.

The ranks and daily rates of pay of the officers of the Army Medical Staff are as follows:—Surgeon-Major-General £2, 15s.; Surgeon-Colonel, £2; Brigade-Surgeon Lieutenant-Colonel, £1, 10s., after five years in the rank, £1, 13s.; Surgeon-Lieutenant-Colonel, £1, after twenty years' service £1, 5s., after twenty-five years' service £1, 7s. 6d.; Surgeon-Major or Surgeon-Lieutenant-Colonel, £1, after fifteen years' service £1, 2s. 6d.; Surgeon-Captain or Surgeon-Lieutenant, £200 a year, after five years' service £250, after ten years' service 15s. daily. Surgeon on probation, 8s.

INDIAN MEDICAL SERVICE.

REGULATIONS FOR THE EXAMINATION OF CANDIDATES FOR THE APPOINTMENT OF SURGEON IN HER MAJESTY'S INDIAN MEDICAL SERVICE.

(*Subject to any alteration that may be determined on.*)

1. *Limits of Age.*—All natural-born subjects of Her Majesty, between 21 and 28 years of age at the date of the examination, and of sound bodily health, may be candidates. They may be married or unmarried. They must possess a Diploma or Diplomas entitling them under the Medical Acts to practise both Medicine and Surgery in Great Britain and Ireland.

2. *Declaration to be submitted.*—They must subscribe and send in to the Military Secretary, India Office, Westminster, *so as to reach that address at least a fortnight before the date fixed for the Examination*, a declaration according to a prescribed form.

3. This declaration must be accompanied by the following documents:—

a. Proof of age, either by Registrar General's certificate, or, where such certificate is unattainable, by the candidate's own statutory declaration, form of which can be obtained at the India Office, supported, if required by the Secretary of State, by such evidence as he may consider satisfactory. A certificate of baptism which does not afford proof of age will be useless.

b. A recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in every respect to prove creditable to the service if admitted; and a certificate of moral character from a magistrate, or a minister of the religious denomination to which the candidate belongs.

c. A certificate of registration, under the Medical Acts, of the degrees, diplomas, and licenses possessed by the candidate.

4. *Physical Examination.*—The physical fitness of each candidate will be determined previous to examination by a Board of Medical Officers, who are required to certify that his vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia will not be considered a disqualification, provided it does not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes exists.

Every candidate must also be free from all other organic disease and from constitutional weakness, or other disability likely to unfit him for military service in India.

5. *Subjects for Examination.*—On producing the foregoing qualifications, the candidate will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—

	Marks.
a. Anatomy and Physiology,	1000
b. Surgery,	1000
c. Medicine, including Therapeutics, the Diseases of Women and Children,	1000
d. Chemistry and Pharmacy, and a practical knowledge of Drugs,	1000

(The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)

The examination in Chemistry will be limited to the elements of the science, and to its application to medicine, pharmacy, and practical hygiene.

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the marks obtainable in each of the above *compulsory subjects.*

6. *Voluntary Subjects.*—Candidates may be examined in the following

voluntary subjects, for which the maximum number of marks obtainable will be :—

	Marks.
French, German, and Hindustani (150 each), ...	450
Natural Sciences, ...	300

The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica.

A number less than one-third of the marks obtainable in any of these *voluntary subjects* will not be allowed to count in favour of a candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

Candidates presenting themselves for examination in Hindustani are recommended to study some recognised text-book, such as the annotated edition of the "Taubat-un-Nasuk," which is the text used by candidates for the Indian Civil Service.

7. The appointments announced for competition will be filled up from the list of qualified candidates arranged in order of merit, as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

The Examiners in London will prepare a list in order of merit, with the marks affixed in the different subjects, to be transmitted to the Director-General and communicated to the Professors of the Army Medical School. If any candidate is found to be deficient in any particular subject, this shall be stated, in order that he may receive special instruction on the point at Netley.

8. *Course at Netley.*—After passing this examination the successful candidates will be required to attend one entire course of practical instruction at the Army Medical School, as Surgeons on probation, in—

(1.) Hygiene.
(2.) Clinical and Military Medicine.
(3.) Clinical and Military Surgery.
(4.) Pathology of Diseases and Injuries incidental to Military Service.

These courses are to be of not less than four months' duration; but candidates who have already gone through a course at Netley as candidates for the Army Medical Service may, if thought desirable, be exempted from attending the School a second time.

9. *Pay and Uniform while at Netley.*—During the period of residence at the Army Medical School, each candidate will receive an allowance of 8s. per diem with quarters, or, when quarters are not provided, with the usual lodging and fuel and light allowances of a subaltern, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of a Surgeon of the British Service, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the Senate may from time to time enact.

11. *Examination at Netley.*—At the conclusion of the course, candidates will be required to pass an examination on the subjects taught in the School. The examination will be conducted by the Professors of the School.

The Director-General, or any Medical Officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a Commission as Surgeon.

12. *Position on List of Surgeons, how determined.*—The position of the candidates on the list of Surgeons will be determined by the combined results of the preliminary and of the final examinations, and, so far as the requirements of the service will permit, they will have the choice of Presidency in India according to their position in that list.

MEMORANDUM REGARDING THE PAY, ETC., OF MEDICAL OFFICERS APPOINTED TO HER MAJESTY'S INDIAN FORCES.

Passage to India.—Surgeons on appointment will, if possible, be provided with passage to India by troop-ship; but when troop-ship accommodation is not available, passage at the public expense will be provided by steamer, or a passage allowance will be granted, if preferred. A charge for messing during the voyage will be made at the rate of 2s. a day. This payment will not include the cost of liquors, which will be charged for as extras.

All Surgeons who shall neglect or refuse to proceed to India under the orders of the Secretary of State for India within two months from the date of leaving Netley, will be considered as having forfeited their appointments, unless special circumstances shall justify a departure from this regulation.

Pay previous to Arrival in India.—The rate of pay drawn by Surgeons from the date of passing the final examination at the Army Medical School until arrival in India will be 10s. a day.

Pay at the above rate will be issued in this country up to the date of embarkation, and an advance of two months' pay at the same rate will also be made prior to embarkation.

Pay and Allowances when in India.—Officers appointed to the Indian Medical Service will receive pay in India according to the following scale when not holding an appointment carrying higher pay:—

Rank.	Years' Service.	Pay and Allowances per Mensem.		
		R.	A.	P.
Brigade Surgeon and Surgeon-Major .	25	888	12	0
„ . .	20	852	3	7
„ . .	15	677	6	11
„ . .	12	640	14	6
Surgeon . . .	10	451	14	5*
„ . . .	6	433	10	2*
„ . . .	5	335	12	2*
„ . . .	under 5	317	8	0*

On first appointment they will only come into receipt of Indian pay and allowances from the date of their arrival in India.

The monthly salaries of officers holding the principal administrative appointments and substantive military charges of the Indian Medical Service receive, at present, the following consolidated salaries:—Surgeon-General, Bengal, Rs. 2700; Madras, Rs. 2500; Bombay, Rs. 2500; Deputy Surgeon-General, from Rs. 2250 to Rs. 1800; Brigade Surgeon or Surgeon-Major, of twenty years' service and upwards, in substantive charge of a Native regiment, Rs. 1000, with Rs. 90 horse allowance in Cavalry regiments; Brigade Surgeon or Surgeon-Major in substantive charge of a Native regiment, Rs. 800, with Rs. 90 horse allowance in Cavalry regiments; Surgeon, above five years' full-pay service, in substantive charge of a Native regiment, Rs. 600, with Rs. 60 horse allowance in Cavalry regiments; Surgeon, under five years' full-pay service, in substantive charge of a Native regiment, Rs. 450, with Rs. 60 horse allowance in Cavalry regiments. The salaries of other substantive medical appointments in the Civil and Military Departments are consolidated, and vary from Rs. 1800 to Rs. 400 per mensem. Qualified officers of the Medical Service are also eligible for appointments in the Assay Department. The salaries of these appointments are from Rs. 600 to Rs. 2250 per mensem. Medical officers are required to perform two years' regimental duty in India before they can be considered eligible for civil employment.

Retiring Pensions and Half-Pay.—Officers of the Indian Medical Service will be allowed to retire on the following scale of pension, on completion of the required periods of service :—After thirty years' service for pension, £700; after twenty-five years' service for pension, £500; after twenty years' service for pension, £365; after seventeen years' service for pension, £292. Time of service for pension will reckon from date of first commission. A Surgeon-General, after five years' active employment in India in that appointment, will be entitled to retire upon a pension of £350 per annum, in addition to that to which he may be entitled under the above scale. A Deputy Surgeon-General will, after five years' active employment in India in that appointment, be entitled to retire upon a pension of £250 per annum, in addition to the pension to which he may be entitled under the above scale.

---

* When not receiving any staff allowance.

A Surgeon-General or Deputy Surgeon-General who has completed his term of service and has reverted to British pay, may reside in Europe, at the same time qualifying for higher pension.

With a view to maintain the efficiency of the service, all medical officers of the rank of Brigade-Surgeon and Surgeon-Major shall be placed on the Retired List when they shall have attained the age of fifty-five years, and all Surgeons-General and Deputy Surgeons-General when they shall have attained the age of sixty years. In any special case, where it would appear to be for the good of the service that the officer should continue in employment, he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

Officers hereafter admitted to the Indian Medical Service will, after retirement on pension before completing thirty years' service, be liable to recall to military duty in case of any great emergency arising, up to 55 years of age.

Medical Officers are entitled to the same allowances on account of wounds and injuries received in action as are granted to combatant Officers of Her Majesty's Indian Military Forces holding the corresponding military rank.

The widows and families of medical officers are also entitled to pensions from the Indian Service Family Pension Fund, to which all Surgeons must, as a condition of their appointment, subscribe from the date of their arrival in India.

NAVY MEDICAL DEPARTMENT.

Admiralty, Northumberland Avenue, London, W.C.

REGULATIONS FOR ENTRY OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL DEPARTMENT OF THE ROYAL NAVY.

1. Every candidate for admission into the Medical Department of the Royal Navy must be not under 21 nor over 28 years of age on the day of the commencement of the competitive examination. He must produce an extract from the register of the date of his birth; or, in default, a declaration made before a magistrate, from one of his parents or other near relative, stating the date of birth. He must also produce a certificate of moral character up to date, and a recommendation signed by a clergyman or magistrate to whom he has been for some years personally known, or by the president or senior professor of the college at which he was educated.

2. He must be registered, under the Medical Act in force, as qualified to practise medicine and surgery in Great Britain and Ireland.

3. He must declare that he is a British subject, the son of parents of unmixed European blood; that he labours under no mental or constitutional disease or weakness, or any other imperfection or disability which may interfere with the most efficient discharge of the duties of a medical officer in any climate; and whether he holds or has held any commission or appointment in the public services.

He must also declare his readiness to engage for general service at home or abroad as required.

He must be free from organic or other disease, and his physical fitness will be determined by a board of medical officers, who are to certify that his vision comes up to the required standard, which will be ascertained by the use of Snellen's test types.

The certificates of registration, character, and birth must accompany the declaration, which is to be filled up and returned as soon as possible, addressed as above.

4. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—Anatomy and Physiology (1000 marks); Surgery (1000 marks); Medicine, including the Diseases of Women and Children (1000 marks); Chemistry and Materia Medica, and a practical knowledge of Drugs (1000 marks). (The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of Surgical Apparatus, and the examination of Medical and Surgical patients at the bedside. The examination in Chemistry will be limited to the elements of the Science, and to its application to Medicine, Pharmacy, and practical Hygiene; and the examination in Materia Medica will include a knowledge of the physiological actions and therapeutical uses of Drugs.

No candidate shall be considered eligible who shall not have obtained at least *one-third* of the maximum marks in each of the above *compulsory subjects.*

5. Candidates may be examined in the following voluntary subjects, for which the maximum number of marks obtainable will be:—French and German (150 each), 300 marks; Biology, Physics, and Physical Geography (100 each), 300 marks. A number less than one-third of the marks obtainable in each of these *voluntary subjects* will not be allowed to count in favour of the candidate who has qualified in the *compulsory subjects.*

The knowledge of modern languages being considered of great importance, all intending competitors are urged to qualify in French and German.

The Natural Sciences will include Biology, Physics, and Physical geography.

6. The appointments announced for competition will be filled up from the list of qualified candidates arranged in the order of merit as finally determined by the total number of marks each has obtained in both the compulsory and voluntary subjects.

7. Successful candidates, immediately after passing the examination, will receive Commissions as Surgeons in the Royal Navy, and will undergo a course of practical instruction in Naval Hygiene, etc., at Haslar Hospital.

8. A fee of £1 will have to be paid by each candidate to entitle him to take part in the competition.

The full and half-pay per day of Naval Medical Officers is in accordance with the following scale:—FULL-PAY: Surgeon—On entry, 11s. 6d.; after 4 years' full-pay service, 13s. 6d.; after 8 ditto, 15s. 6d. Staff Surgeon—On promotion, £1, 1s.; after 4 years' full-pay service in rank, £1, 4s. Fleet Surgeon—On promotion, £1, 7s.; after 4 years' full-pay service in rank, £1, 10s.; after 8 ditto, £1, 13s. Deputy Inspector General, £2, 2s. Inspector General, £2, 15s. On first appointment to the service, medical officers will receive full pay from date of appointment, but subject to the provisions of Art. 1255, clause 2, of the Queen's Regulations, 1879. HALF-PAY: Surgeon—Under 2 years' full-pay service, 6s.; after 2 years' full-pay service, 7s.; after 4 ditto, 8s.; after 6 ditto, 9s.; after 8 ditto, 10s.; after 10 ditto, 11s.; Staff Surgeon—On promotion, 12s.; after two years' full-pay service in rank, 13s.; after 4 ditto, 14s.; after 6 ditto, 15s. Fleet Surgeon—On promotion, 17s.; after two years' full-pay service in rank, 18s.; after 4 ditto, 19s.; after 6 ditto, £1. Deputy Inspector General—On promotion, £1, 5s.; after 2 years' full-pay service in rank, £1, 7s.; after 4 ditto, £1, 9s. Inspector General, £1, 18s.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

The Gallate of Bismuth—"Dermatol."—Drs Heintz and Liebreich announce, in the *Gazette Médicale de Paris*, June 20, 1891, that they have in the gallate of bismuth, or "dermatol," a topical application, which they recommend as a substitute for iodoform, in that it possesses all the properties of the latter substance, with the great advantage of being inodorous. The gallate of bismuth occurs in the form of a fine powder, without odour, of a yellowish saffron colour, and of an aspect somewhat similar to iodoform. It is not hydroscopic, and does not decompose when exposed to the air or the light. It is insoluble in ordinary solvents, and consequently is free from toxicity; for when applied to a raw surface, such as that of a wound, it is absolutely incapable of absorption. It is said not to act as an irritant on the surfaces with which it comes in contact. It possesses considerable desiccating power, and to this extent acts as stimulant. The authors state that their clinical experiments with dermatol, which have already amounted to more than 100, show that cicatrization is rapid, and the formation of granulations favoured, while the secretion of pus is diminished. They have used this salt in the treatment of burns, in eczema, in ulcerations, in ocular affections with painful morbid secretions, in affections of the nose and ears, and especially in otorrhœa. Finally, they add that the gallate of bismuth may be administered internally in the dose of 30 grains, without producing the slightest symptoms of poisoning, and it may thus be substituted for the subnitrate of bismuth in affections where this preparation is indicated.—*Therapeutic Gazette*, August 1891.

Use of Dermatol in Surgery.—Dr Sackur (*Berlin. Klin. Wochenschrift*, August 10, 1891) publishes the results of experiments with dermatol as a substitute for iodoform in surgery. While resembling the latter in character and colour, dermatol is free from odour and poisonous properties, and it has been used in Breslau as an application to wounds in 100 cases, with, on the whole, satisfactory results. When applied to fresh, clean wounds, this application promoted rapid cicatrization; and, owing to its absorbent character, kept the wound dry and the skin free from the eczema that is so often produced by irritating discharges. Dermatol is less suited to septic wounds—for example, abscesses or carbuncles. With such the better plan is first to cleanse the wound by antiseptic treatment, and then to resort to dermatol as a healing application. In the treatment of chronic ulcers, Sackur met with highly satisfactory results, except where such ulcers had an indolent character, and were covered with dry chronic granulations. Here dermatol proved insufficiently stimulating. As regards antiseptic and antituberculous action, iodoform bears the palm. Dermatol, on the other hand, is a safe, inodorous, slightly antiseptic application, which, with the exceptions noted above, will be found a useful and agreeable application.—*Supplement to British Medical Journal*, 12th September 1891.

Eucalyptol in Chest Affections.—In the *Therapeutie Gazette* for July, Dr J. N. Brainerd states that during the last ten years he has often prescribed eucalyptol in bronchial and pulmonary troubles. He puts a high therapeutic value upon it in chronic bronchitis, chronic interstitial pneumonia, persistent cough, and to a less degree in tuberculosis. He adds, it is antiseptic, it has a healing effect upon the bronchial epithelium, and a sedative effect upon the peripheral nerves in the respiratory tract. It is because of these physiological effects that the therapeutic results are produced. He administers it in five to ten minim doses in emulsion every four hours.

Pilocarpine in Œdema of the Glottis.—In *La Médecine Hypodermique*, May 1891, Dr Saurez de Mendoza writes that in November 1890 he was called in haste by one of his colleagues to examine the larynx of a young man suffering from œdema of the glottis, and apparently at the point of suffocation. The situation was critical, and tracheotomy was under consideration, when on laryngoscopic examination it was noted that a small opening appeared between the œdematous tumours on each side of the larynx, which became marked during respiration. The author, thinking that the case did not call for immediate surgical interference, proposed the employment of pilocarpine, which had already in his hands proved successful in two analogous cases. Accordingly, three injections, amounting to $\frac{1}{25}$ grain of pilocarpine, were injected at intervals of twenty minutes. After the first injection improvement was visible, and one quarter of an hour after the third injection all dangerous symptoms had disappeared.—*Therapeutic Gazette*, July 1891.

Exalgine in Infantile Therapeutics.—In the *Bulletin Général de Thérapeutique* for May 30, 1891, Dr Moncorvo publishes notes of twenty-one different cases occurring in children where exalgine was employed, of which the following represents a *résumé* of his observations:—1. The marked activity of exalgine as an analgesic has been well demonstrated in twenty-one different children, varying from 1 to 12 years of age, in whom it was administered in various painful affections. 2. In all the children the medicine was without exception well borne. 3. None of the complications, such as ringing of the ears, nausea, and dizziness, sometimes stated to have been observed in adults as a consequence of exalgine, were noted. 4. Exalgine was employed at first in the dose of $\frac{3}{4}$ grain daily, gradually increasing up to 5 grains. 5. Since the dose of exalgine is not disagreeable to the taste, it was given to most of his patients in substances applied directly on the tongue, while in some it was suspended in diluted wine. 6. All things being equal, the writer states that exalgine exceeds antipyrin in activity, and the same effects may be expected from it as might be looked for from a dose of antipyrin five times as large. 7. The author believes that the facts related in his report warrant the use of this analgesic in infantile therapeutics. One case of chorea, which was improved under the use of exalgine, points to the possible importance of this remedy in this disease.

CHLORIDE OF GOLD AND SODIUM IN DIABETES MELLITUS.—Dr J. A. Robinson reports two cases of diabetes mellitus treated with chloride of gold and sodium successfully:—Case I. A commercial traveller. One year ago he noticed he had to urinate very frequently, rising from six to ten times each night, and passing about three quarts daily. Urine, specific gravity 1040, and containing sugar. Five minims of chloride of gold solution, representing a dose of $\frac{1}{30}$ grain three times daily, gradually increasing dose until physiological action appears. Repeated urinalysis during a period of eight weeks demonstrated a steady decrease of sugar until it became normal, and has remained so; specific gravity 1019. Case II.—A widow. Has undoubtedly had diabetes mellitus for ten years; urine containing sugar; specific gravity 1038. A few weeks ago began chloride of gold and sodium treatment. Through a misunderstanding, the patient took the salt in such rapidly increasing doses, and for so long a period, that she was salivated. At length she sent me a specimen of urine, and it was free from sugar; specific gravity 1020, and up to date no reappearance of sugar.

MEDICAL PERISCOPE.

By FRANCIS TROUP, M.D.

Berlin. Klin. Wochensch., Nos. 29, 30.—Prof. Erb of Heidelberg has two contributions to the etiology of tabes. He tabulates 300 cases, but excludes 19, about which he could not get sufficiently definite statements as to causes. The juxtaposition of the noxæ which have preceded the development of tabes gives the following results:—

Syphilis (or chancre) alone, .	77 =	circa 27	per cent.
Syphilis + cold, . . .	32 =	„ 11	„
Syphilis + fatigue, . .	17 =	„ 6	„
Syphilis + sexual excesses, . .	27 =	„ 9·6	„

Syphilis + trauma, . .	5=circa	1·7 per cent.
Syphilis + neuropathic tendencies,	31= „	12 „
Syphilis + cold + fatigue, . .	39= „	13·5 „
Syphilis + cold + excesses, .	5= „	1·7 „
Syphilis + fatigue + excesses, .	2= „	0·7 „
Syphilis + 3 or more other noxæ, .	11= „	4 „
Syphilis + trauma + cold or excesses,	3= „	1 „
	249 cases.	

Neuropathic tendencies alone, .	2=circa	0·7 per cent.
Cold alone, ...	4= „	1·4 „
Fatigue alone, ...	1= „	0·3 „
Sexual excesses alone, . .	3= „	1·0 „
Cold + fatigue alone, . .	2= „	0·7 „
Trauma alone, ...	1= „	0·3 „
Several causes, but not syphilitic, .	4= „	1·4 „
Cases without demonstrable cause, but in several of which Syphilis was suspected, ...	15= „	5·4 „
	32 cases.	

Those tables make one thing very conspicuous, viz., that in the absence of syphilis, other noxious agents are of minor importance, while on the other hand they intensify the probability that tabes will result in persons already tainted with syphilis. Every one who does not shut his eyes to facts may see, what Erb had already pointed out in 1883, that syphilis is undoubtedly the most frequent and weighty morbid agent in the causation of tabes; that other factors occasion the disease very seldom by themselves alone, but chiefly when the syphilitic taint co-operates with them.

Ibidem, No. 31.—Dr Oscar König of Breslau has an article, with drawings, explaining how perimetry may help to discriminate between the real and simulated in cases of traumatic neurosis. He thinks the capability of fixing steadily and giving correct information as to the point of disappearance and reappearance of the test object in the field of vision is possessed by most people, if only they are instructed clearly as to what is wanted of them in this examination. Otherwise the best way to proceed is to practise the patient in the fixation of the blind spot of Mariotte; should he give this correctly, his statements as to the boundaries of the field of vision may be relied upon.

Ibidem.—Dr Hermann Oppenheim contributes a paper on the subject of myelitis. He considers that the subject of myelitis is, in many respects, still wrapped in obscurity; more doubt and insecurity reign in this than in any other department of spinal cord pathology; at all events a simple, legitimate myelitis is a very rare disease, and therefore a diagnosis must be made with precaution and careful regard to the cerebral functions. It is not at all doubtful that infections and intoxications of various kinds are prime factors in its causation, and when developed on this basis its form is frequently a disseminated myelitis or myelo-encephalitis, and may be combined with neurotic processes. The so-called chronic myelitis is mostly a multiple sclerosis. With this sharper limitation of the extent of the disease, the prevailing views as to prognosis must undergo modification, because this must be more favourable when multiple sclerosis and compound affections, involving the several columns of the cord, are eliminated.

Ibidem.—Dr Carl Stern communicates a paper on injection experiments with the metabolic products of tubercle bacilli. The tubercle bacilli were cultivated in a nutrient medium of 10 per cent. peptone, 5 per cent. glycerin, 0·5 per cent. common salt, 0·1 per cent. flesh extract. In five weeks the bacilli had settled down to the bottom of the tubes as a white powdery precipitate, the supernatant medium remaining perfectly clear. This fluid was removed carefully by pipette, heated over the water-bath to kill off any bacilli present and to destroy toxines; then filtered and evaporated to one-fourth of its original volume. The liquid so obtained has a brown colour, syrupy consistence, and smells of caramel.

This fluid is very like the Koch lymph, and the experimental injections made with it caused, in many respects, similar reactions and effects as tuberculin.

Ibidem, No. 34.—Prof. O. Rosenbach of Breslau, having failed utterly to cultivate the parasites of malaria in artificial media, bethought himself of preserving them alive in the leech, because this annelide, in virtue of some peculiar substance contained in its body, prevents coagulation of the blood it sucks, and can keep it garnered up for months in its digestive tract in a liquid condition. In a case of tertian ague, two leeches were applied over the region of the spleen on the day the paroxysm was expected. After twenty-four hours one of the well-filled leeches was opened, and in the tolerably large, liquid, normally coloured sanguineous contents of the digestive canal enormous numbers (as many as three to five in some of the microscopic fields) of plasmodia of the large form, with abundant pigment, in lively motion were found. The blood corpuscles were very well preserved; they showed neither graining nor contraction, nor any paling of their colour, when compared with fresh blood. After forty-eight hours the second leech was opened, and the same appearances were found: perfect integrity of the red blood-corpuscles, and very abundant, lively motioned, pigmented parasites. Rosenbach also mentions the finding, mixed up with the blood, of cells peculiar to the leech; they are round, sometimes granular, sometimes nucleated, sometimes not granular, and very much resemble yeast-cells; and it seems impossible to confound *them* with plasmodia, because they are motionless, are not pigmented, and are much smaller than the parasites, which latter almost attain the size of red corpuscles. He thinks it also worthy of notice that the blood sucked by the leeches seemed to contain extraordinarily few white corpuscles.

Blood from two leeches applied the day after the paroxysm showed very few plasmodia, which were shrunken, contained little pigment, and were not motile. (Effect of quinine administered?) It seems therefore—

1. That the parasites of malaria can be kept alive for at least forty-eight hours in the digestive canal of the leech.
2. That quinine is able, even although it may not prevent a rising temperature, owing to its too late administration, to prevent or at least delay the development of the parasites.

Further researches, which will be set about as soon as a favourable opportunity casts up, should move in the following lines:—

1. So many leeches must be applied as to render possible a successive examination of the blood sucked up during the whole circuit of the developmental period of the parasite—of the incubation stadium, which may be reckoned at eight or ten days; for it is not enough to settle how long the parasites may be kept alive, but it must be made out whether the parasite goes through several developmental stages; and, lastly, it must be investigated whether the leech itself becomes infected after a time or remains merely the host of the parasite, which latter would then come to be regarded as a mere intestinal hanger-on.
2. It must be settled whether the blood taken from the leech can infect other animals—the frog, for instance.
3. It must be tried whether small quantities of malaria blood, if mixed with the blood of a normal man (of course outside the body), such blood being kept liquid by being passed through the body of the leech, will serve as a nutrient medium for plasmodia. Such a method of preparing a fluid medium, possessing all the qualities of the blood save its coagulability, might be useful for the culture of others of the smallest organisms.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

The Nature and Pathology of Prurigo.—Prurigo has been for some time a vexed question. While many agree with Hebra as to its independent entity, others are inclined to deny this, following Hutchinson. It seems rather rare in America, but Taylor and Van Gieson have made an exhaustive study of an instance apparently conforming in most points to Hebra's definition. The patient was a girl of nine, in whom the disease commenced at the age of four, and the initial eruption was urticaria or lichen urticatus.

After its commencement it never entirely disappeared, but was moderately severe in winter, and ceased almost completely in warm weather. The papules were met with on the forehead, temples, and cheeks, as well as in the situations more particularly affected in prurigo. There was discoloration of the skin, increased development of its furrows, well-marked evidences of scratching, and enlargement of the lymphatic glands. The course of the papules seemed to be as follows. They were first noticed as little shotty bodies under the skin or seemingly in the rete. Such may then undergo involution or disappear, the process being accompanied by mild desquamation, until either no trace is left of them in the skin, or minute, shining, very slightly depressed spots of atrophy for a time remain. Many very excellent drawings of sections from this case, and three carefully prepared pictures of the clinical features, accompany the text. The authors conclude "that prurigo nodules and papules seem to be due to a circumscribed effusion in the deeper derma or papillæ, which soaks into the rete and produces cysts, which may subsequently atrophy, and is accompanied by a chronic cellular inflammation in the derma with secondary alterations in the hairs, sebaceous glands, smooth muscle bundles, and hypertrophic regions in the epidermis." The relation existing between the subepidermic nodules and the cysts could not be accurately determined.—*New York Medical Journal*, January 3, 1891.

THE DIAGNOSIS OF CHRONIC GLANDERS.—Cases of glanders are now fortunately very rare in man, but this very infrequency of occurrence leads to error in diagnosis, all the more because those who are the unfortunate subjects of this disease are apt to conceal their occupation, or their having been in contact with horses. Such at least apparently led to confusion as to the nature of two cases fully recorded by MM. Hallopeau, Jeanselme, and E. Besnier. The prolonged course of the complaint in certain cases is shown by the fact that in one the symptoms lasted, with periods of intermission, for six, in the other for four or five years. The disease in both was for a time regarded as due to syphilis, and mercury and iodides were prescribed, with a temporary apparent improvement in one, with aggravation in the other instance. Glanders should be suspected, says one of the authors named, "when one sees supervene, after a prolonged series of abscesses, either subcutaneous or intra-muscular ulcerations of the nasal fossæ, of the buccal mucous membrane, or of the soft palate, with painful swelling of one of the lacrymal sacs, associated with a purulent secretion from the nostrils." Among the differential signs it is necessary to note the absence of ganglionic enlargements, the formation of deep sloughs with rapid destruction of tissue, and finally a pustular eruption, which may remain limited to the skin of the nose. Cultivations are of much value in diagnosis. Those made on potatoes assume in a few days a characteristic reddish-brown colour. Another method is to scarify superficially the skin of the forehead of a dog, and there is produced, after the inoculation has been made there, in three to five days a characteristic chancre of glanders, very rich in the specific bacilli. The lesion so made is a purely local one, and can be cured without causing the animal's death. The sole treatment, it may be added, of any value, was cauterization by means of the actual cautery.—*Annales de Dermatologie et de Syphiligraphie*, April 1891.

VERRUCÆ SENILIS.—Mr Hutchinson has remarked on the connexion which sometimes, at least, exists between these growths and a family tendency to cancer. In one very remarkable instance, an unmarried lady, aged 55, consulted him on account of a large crop of papillary growths on her chest, neck, and back. On the neck they were innumerable, but very small and pedunculated. On the shoulders they were so numerous as to be almost confluent, but here they were low and flat. On the shoulders they were discoloured by dirt, although she was a person of most scrupulous cleanliness, and some of them were, he thought, more or less pigmented. The history of the connexion of these papillary growths with family tendency to cancer was very marked in this lady's case. Her father had had a growth excised from his shoulders, and a paternal uncle was suffering at the time she consulted him from an ulcer on his temple, probably rodent. His maternal grandfather had died from cancer of the throat, and a maternal aunt from cancer of the breast.—*Archives of Surgery*, July 1891.

SCLERODERMA, ASSOCIATED WITH HEMIATROPHY OF FACE AND LIMBS.—Some interesting points are touched on in this article by Dr Nixon. A boy of 11, when in perfect health, received a violent kick in the left gluteal region from his master while at school. This produced sickness, headache, and fever for a time, and left the leg weak and stiff. A month later the symptoms of scleroderma manifested themselves. These followed the distribution of the internal cutaneous nerve of the leg, the descending branches of the cervical plexus, the circumflex and median nerves in the arm, and, with the development of hemiatrophia facialis, implicating the left half of the tongue and the left side of the arch of the palate. The scleroderma appeared as reddened patches, changing in time to a dark brown tint; with this there was distension of the veins at the margins of the patches, and stiffening of the left limbs and left side of the chest and abdomen. There was also contracture of the limbs, lasting four months, then gradually and completely subsiding. The patches developed in succession,—interesting as contradicting the view expressed by Mr Hutchinson, that morphœa never spreads, but increases by fresh patches forming near and uniting by coalescence with the primary patch. Most, if not all cases of morphœa are developed in patches corresponding to the distribution of cutaneous nerves, and their close association with neuralgic conditions show clearly their dependence or altered nervous influence. Nixon had such a patient, who complained of a severe form of right tic douloureux. A year later very little alleviation of the attacks of paroxysmal pain had occurred, but a change had taken place in the area of distribution of the right supraorbital nerve. The hair over the right half of the frontal bone was considerably thinner and of a steel-gray colour, while the skin over the same area presented four or five linear bands of morphœa, glistening and waxy-like in appearance. In hemiatrophia facialis he thinks the morbific influence is exercised, not through the fibres of the trigeminus, but by the sympathetic filaments which join it at the Gasserian ganglion, or by special nerve fibres which pass along the inner border of the fifth nerve. He cites two cases recorded by Seeligmüller, in which facial atrophy was produced by injury of the sympathetic.—*Med. Press and Circular*, Feby. 4, 1891.

WHAT IS ECZEMA?—This familiar question is the one which, in a highly philosophical paper, Dr Leslie Roberts sets himself to answer. The article is one extremely hard to summarize; but if this brief notice will induce any of our readers to study it for himself, the time so spent will not be wasted. After pointing out that much of our difficulty in framing a satisfactory reply arises from the evil habit of overmuch study of *forms* under which skin diseases manifest themselves, he states that the whole duty of the present inquiry is to set forth these *material* conditions, the sum of which is eczema. These may be collected into two groups—those *fixed* in the structures of the skin, and those *unfixed* moving conditions which are brought to the skin by the atmosphere, by the blood-stream, and by the nerves. We conceive the skin as a multiform structure, whose outer and inner surfaces "stand differently related to surrounding agencies—nutriment, oxygen, and various stimuli." In considering the kinds and arrangements of cells in the skin, and the molecular dispositions within them which are understood to be the fixed material conditions of eczema, we find that there is the horn-cell, stable and inert, situated on the extreme outer surface; the nucleated cell, in the deepest layers of the epidermis, active and unstable; the fibres and cells of the dermis, and the fat-cells on the extreme inner surface. In the centre is the "indifferent layer," which contains cells, active and unstable, because their molecules are composed of a large number of atoms of very different degrees of density and vibration. On either side is a gradation of stability and inertness, increasing towards the extreme surfaces, associated with increasing simplicity of molecular composition and constitution. There is in the progress of the active cell-condition of the skin towards the passive cell-condition a *progressive elimination of oxygen* from its molecules, which is arrested or diverted in eczema. Causes of eczema may come from without; and he believes that the commonest external agents which evoke the inflammatory changes variously described as dermatitis and as eczema *live on* and in the skin. The special fungus which produces eczema has not yet been isolated; but, as Unna suggests, the more injurious the products of any germs may be, the fewer of those germs will be required to evoke the injury. The large number of passive germs present, which we cannot exclude in our attempts to cultivate *the* germ, naturally makes its detection a difficult matter. Another cause of eczema may be through the blood-stream by means of particles conveyed from one part to another. Relapses in eczema are wont to arise from a fresh extension of the disease from some uncured focus. He is not prepared to admit that the nerves have any positive influence in evoking eczema. In eczema there are three groups of sequences: —1. Unknown primary changes in the cells; 2. Arrangements to dispose of the adventitious matter from the blood; 3. Altered chemical action in the epithelium,—which sequences have certain forms which appear on the surface of the skin, as redness, swelling, papules, vesicles, etc., and desquamation of cells. In the management of eczema three objects are to be specially aimed at:—1. To sterilize the skin; 2. To aid the removal of the adventitious fluid and cells; 3. To help the formation of the new horny cuticle, and to protect the skin during and for some time after its formation. To fulfil the first indication, agents were usually selected which possess the power of not only destroying fungi, but of promoting the formation of horny epidermis. This he believes they do by facilitating the liberation of oxygen from the molecules of the indifferent layer of the epidermis. Such deoxydising agents as resorcin, sulphur, chrysarobin, pyrogallic acid, tar, etc., can do more harm than good if the quantity and mode of application is not studied carefully in each particular case of eczema. Thus resorcin in concentrated quantities is actually a caustic. Tar, which has strong affinities for oxygen, may by its persistence or too abundant use cause inflammation rather than cure it. Alkalinity of the medium in which oxydation is going on favours its continuance. Unna maintains that there is an advantage in prescribing salicylic acid with our reducing agent. This, when pyrogallic acid is used, may depend partly on the controlling influence of the acid on the oxydation of the pyrogallol, and partly on the power of the salicylic acid to remove the outer horny cells, whereby the reducing agent obtains freer access to the deeper parts of the epidermis. When the eczema is in an infant or child, whatsoever be the treatment adopted, it must not violate the principle, "Avant tout ne pas nuire au malade." Let the practitioner, when in doubt before an eczema in a tender child, content himself with applying *calamine lotion,* and he will never require to prove from sad experience the truth of the wise saying. Various valuable hints are furnished as to the selection of remedies, both external and constitutional, arsenic being specially condemned as hurtful in acute eczema, and unnecessary in chronic.—*Liverpool Medico-Chirurgical Journal,* July 1891.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P.E., Lecturer on Midwifery and Gynæcology, and on Diseases of Infancy and Childhood, School of Medicine, Edinburgh.

On Pregnancy after Abdominal Hysteropexy performed for Uterine Retroflexion (F. Fraipont, *Archives de Tocologie*, July 1891).—Fraipont records three cases in which pregnancy supervened after abdominal fixation of the uterus for retroflexion. Two of these cases resulted in premature confinements, the third went to the full term. In all the patients there were during the first half of pregnancy sharp pains in the cicatrix; but during the latter half of gestation these pains were not continuous, and were quite easily borne. The labours were normal, and there were no pathological symptoms during the puerperium. With regard to the present condition of the three patients, in one the retroflexion has returned, in another there is an approach to retroversion, and in the third the uterus remains normal in position. The author opposes the views of Gottschalk and Küstner, who do not advise abdominal fixation for retroflexion when the patients are young and anxious to bear children.

A Case of Cure of Pruritus Vulvæ by means of the Constant Electrical Current (Cholmogoroff, *Centralblatt für Gynäkologie*, July 18, 1891).—Pruritus, save when due to some irritating vaginal discharge, or when it occurs in a diabetic subject, is proverbially difficult to treat. Medicinal treatment is very unsatisfactory, and so much is this the case that several gynæcologists have recently practised excision of the painful parts of the labia. Surgical means, however, have not always been successful, and hence the record of this case, in which the patient was apparently entirely cured by means of electricity, is distinctly encouraging. The anode was placed in the vulva, and the cathode applied to the points of irritation without breaking the current. The applications lasted from ten to fifteen minutes, and the strength of the current was about 20 milliampères. The treatment was continued for a little more than a month, and the patient was cured.

Triplets, one Living Child and two Papyraceous Fœtuses (Bazzanella, *Centralblatt für Gynäkologie*, July 25, 1891).—Bazzanella records a most interesting case of triplets, one fœtus being alive and normal, the other two papyraceous. The patient was 32 years of age, and a primipara. There was no trouble during pregnancy. The liquor amnii was somewhat profuse, and the first child was delivered by forceps. With the placenta there came away a mummified fœtus, resembling, as regards size, a three months' abortion. Forty-eight hours after labour there came away a second and atrophied placenta, of which the chorion was single, but the amnion double. With it appeared a second fœtus papyraceus. The two papyraceous fœtuses were, therefore, uniovular twins. Each measured about 4 inches in length.

TUBO-UTERINE PREGNANCY (Jewett, *American Journal of Obstetrics,* July 1891).—Dr Jewett records a case of that rare variety of ectopic gestation, the interstitial tubal. The patient had been married nine years, and had had one child seven years ago, and a miscarriage six years ago. She was now pregnant again, and had advanced to the fourth month, when the well-known symptoms of rupture took place. When about two months pregnant she had had some red discharge and pains. The abdomen was opened, when it was found that there was a rent in the right uterine corner, from which protruded the cord, and the fœtus was found amongst the intestines. The peritoneal cavity was flushed with hot water to remove the clots, the right tube and ovary were removed, the placental tissue pared away, and the edges of the rent were trimmed and brought together with deep silk sutures. At this time the patient died.

A CLINICAL REPORT OF TWO CASES OF REMOVAL OF THE OVARIES, WITH INTESTINAL LESIONS (Kletzsch, *American Journal of Obstetrics,* August 1891).—The writer records two cases operated on by Dr Cleveland, in both of which oophorectomy was complicated by intestinal lesions. In one case the left tube was found enlarged, and there was an abscess in the left ovary which had opened into the intestine. When the mass had been separated from the intestinal wall it was found that there were two rents; these were closed by silk sutures, but an abscess formed, and she died a month afterwards. In the second case the tube and ovary were widely adherent, and in the process of separating their connexions the wall of the intestine was lacerated. As a large part of the bowel was in an unhealthy condition, about 5 inches of it were excised by circular enterorrhaphy. The patient made a tedious but entire recovery.

NECROSIS OF THE BLADDER (F. A. L. Lockhart, *Montreal Medical Journal,* July 1891).—The writer records a case of "necrosis" of the bladder, which took place in the Edinburgh Royal Infirmary. It followed a tedious labour, in which the head was jammed for a long time at the brim, and was finally delivered with much difficulty by means of forceps. More than two years after this occurrence two pieces of membrane were discharged per urethram, and the incontinence and dysuria from which the patient had been suffering disappeared soon afterwards.

A SUCCESSFUL CÆSAREAN SECTION (Gibbons, *Occidental Medical Times,* July 1891).—Patient was 4 feet 4 inches in height, a primipara, and had been twenty-four hours in labour. The conjugata vera measured 2⅝ inches. Dr Gibbons performed Cæsarean section, and extracted a fœtus weighing over 8 lbs., which, although still at first, was rapidly and completely resuscitated. The uterine wound was closed with six silver-wire sutures. The patient's recovery was somewhat retarded by a small abscess in the abdominal wound, but was ultimately perfect.

A CASE IN OBSTETRICS, FOLLOWED FOR MONTHS BY A DAILY DISCHARGE OF OVER TWO QUARTS OF A WATERY FLUID THROUGH THE CERVICAL CANAL (Bradshaw, *The Journal of the American Medical Association*, July 11, 1891).—The author reports a case of face presentation in which turning was performed. The child, which was dead, was a male weighing 12½ lbs., and had a large ossified head. There was great hæmorrhage after delivery. Three weeks after the confinement a very profuse watery discharge from the vagina took place, and continued daily for three months. There was no vesico-vaginal fistula. The urine was passed in the usual way, and was normal in its characters. The discharge ceased whilst the patient was taking codeia (½ grain every three hours), but has recurred, although in smaller amount. The author is of opinion that the fluid comes from the peritoneal cavity, and is generated by the peritoneum. It is thought that there may be an opening in the uterine wall. The patient remains an invalid.

PREMENSTRUAL PAIN AND CONVOLUTED TUBES (Robinson, *Jour. of the American Medical Association*, July 4, 1891).—The author believes premenstrual pain to be due to peristalsis of the tubes—to be, in fact, true tubal colic. He has found nervous ganglia on the walls of the tubes, and these he terms the "automatic menstrual ganglia." Dr Robinson has examined some 700 tubes from the human subject, the cow, the pig, the sheep, and the dog.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

EXCISION OF THYROID ISTHMUS.—Sir William Stokes, dealing with operations on the thyroid gland, points out that in cases of general thyroid enlargement ligature and excision of the isthmus has been followed by shrinkage of the lateral enlargements. This clinical experience he has had in two cases—in one, where there was triple enlargement and the median and largest portion alone was dealt with; and in another, where more extensive ablation was contra-indicated. It is, in Sir William Stokes' opinion, matter worthy of consideration whether this less hazardous operation might not be undertaken with a good prospect of success in exophthalmic goitre.—*Dublin Journal of Medical Science*, July 1891.

RARE LUXATION AT THE ELBOW.—Dr Dulles reported a case of a woman, 22 years old, in whom a fall produced dislocation of the radius forwards, upwards, and inwards, and of the ulna backwards, upwards, and outwards. The width of the joint was increased about double, the arm was semi-flexed, and the forearm so over-pronated that the dorsum was turned towards the chest. The radial head lay above and in front of the internal condyle. Reduction was effected, and after two months the patient had almost unimpaired movements of the joint.—*Medical News* (Philadelphia), June 20, 1891.

COMPOUND DISLOCATION OF THE HIP.—Dr Cheever records a case in which this injury was caused by a heavy weight falling upon a labourer. The head, which projected in the right groin, was excised. The man died on the second day, and was found to have sustained other serious injuries.—*Boston Medical Journal*, May 28, 1891.

RELAPSE AFTER RADICAL CURE FOR HERNIA.—Professor Bull states that the investigation of 73 cases (in which the method of operation was ascertainable), with respect to the periods at which recurrence took place, warrants the statement that "future evidence as to the value of different methods must cover an experience of more than three years, and that patients who have been without recurrence for a year have no reason to expect to remain so permanently." The total number of cases of relapse seen during three years in the Hospital for Ruptured and Crippled was 119; but in 73 only were the data sufficiently trustworthy to admit of tabulation.—*New York Med. Journal*, May 30, 1891.

APPENDICITIS.—Dr Elliot (Boston) considers "it important to know, from an operative point of view, that when the omentum is seen brawny, inflamed, and rolled up, it contains the gangrenous appendix, and should be excised with it. Also, when a gangrenous groove is seen on the surface of the omentum it is a guide to the position of the appendix.—*Boston Med. and Surg. Journal*, May 21, 1891.

LARYNGECTOMY.—Tauber tabulates and analyzes 163 cases in which this operation has been done. He finds that a fatal issue follows in 69·9 per cent. of all cases; that freedom from recurrence for three years subsequent exists in 7·9 per cent. of cured cases. Tauber finds little improvement in these figures as compared with those of ten years ago.—*Archiv. für Klin. Chir.*, Band xli. Heft 3.

ÆTIOLOGY OF ACUTE CYSTITIS.—J. Schnitzler has observed a bacillus in the urine presenting certain analogous features to an organism discovered by Krogius. In 20 cases of cystitis it was present 13 times (8 times in a state of pure cultivation); of 12 cases when the cystitis followed catheterism, 9 exhibited the bacillus. Intra-venous injection of the organism practised upon rabbits caused death in from three to eight days, and one found suppurative nephritis and inflammation of the bladder mucous membrane. Injection into the bladder of rabbits caused severe suppurative cystitis.—*Centralblatt für Chirurgie*, No. 13, 1891.

MICRO-ORGANISMS IN THE HUMAN URETHRA.—M. E. Petit and M. Wasserman from exhaustive examination in four subjects, in whom previously existing gonorrhœa was absolutely excluded, as also any other local malady, draw the following conclusions:—(1.) The normal urethra is always inhabited by various micro-organisms; (2.) The same varieties are not always found in different urethræ; (3.) In the same individual differences exist between the organisms of the meatus and those forms found in the deeper portions of the urethra; (4.) None of the varieties which they found was pathogenic in ordinary conditions; (5.) Most of these organisms decompose urine; (6.) The *pseudo-gonococci* noted by Lustgarten and Mannaberg were not found. MM. Petit and Wasserman met with fourteen varieties of micro-organisms.—*Annales des Maladies des Organes Genito-Urinaires*, June 1891.

Removal of Clots from the Bladder.—M. Paul Noguès narrates two cases of serious hæmaturia with the formation of vesical clots in which M. Guyon obtained the best results by aspiration per urethram. A metal evacuator (No. 24–26 French) was introduced, and forcible aspiration made by means of a glass syringe adjusted to this instrument; boracic lotion was then injected, and aspiration once more performed. These manœuvres were repeated till the lotion returned several times clear and without a fragment of clot. To secure success, the clots, M. Guyon insists, must be wholly evacuated; the proceeding, he believes, has no tendency to provoke further bleeding. Morphia is hypodermically administered afterwards to moderate the frequency of the contractions of the bladder.—*Ibid.*

Part Fifth.

MEDICAL NEWS.

List of the successful Candidates at the recent Competitive Examination for Commissions in the Medical Staff of Her Majesty's Army:—

Order of Merit.	Names.	Total Number of Marks.	Order of Merit.	Names.	Total Number of Marks.
1.	Pilcher, E. M.,	3300	11.	Alexander, J. D.,	2645
2.	Johnson, H. P.,	3165	12.	Holt, R. H. E. G.,	2640
3.	Beyts, W. G.,	2970	13.	Kelly, J. F. M.,	2635
4.	Stalkartt, H. A.,	2780	14.	Dunn, H. N.,	2620
5.	Morphew, E. M.,	2710	15.	Hughes, G. E.,	2620
6.	Fleming, C. C.,	2700	16.	Martin, C. B.,	2610
7.	Tyacke, N.,	2700	17.	Withers, S. H.,	2600
8.	Mitchell, L. A.,	2690	18.	Buchanan, G. J.,	2580
9.	Lawson, C.B.,	2680	19.	Crawford, G. S.,	2550
10.	Anderson, E. C.,	2670	20.	Hennessy, J.,	2550

Cheap Substitute for Absorbent Wool as a Surgical Dressing.—Mr Charles W. Cathcart writes to recommend fine wood shavings (Arbey Wood Wool Company's "Superfine Wood Wool") boiled in caustic soda to remove the resin. These shavings are then washed and dried, and, after being packed in muslin bags, are charged with corrosive sublimate. In some respects he has found this dressing even better than absorbent wool, and he reckons the cost previous to charging with sublimate to be about 2d. per lb. He is indebted to Mr Wilson (of Messrs Turnbull & Wilson) for suggesting the material, to Mr Annandale of Polton Mills for very kindly carrying out experiments in boiling it, and to Mr Arthur of Edinburgh Royal Infirmary for numerous hints and suggestions. Mr Cathcart hopes shortly to give a more minute account of the method, and of the results obtained by it.

The Edinburgh School of Cookery and Domestic Economy, Limited, for Technical Training in Domestic Work. Seventeenth Session, 1891–92.—The prospectus of this old and excellent Institution, which now in new premises has been started on newer and more extended lines, lies before us. A good cook is so distinctly an *Ancilla Medici*, that we may welcome any institution for the manufacture of cooks. Judging from the prospectus, this Institution can turn out not only good cooks, but highly trained and domestic wives; for any girl who has with brains and attention gone through the course of instruction rendered possible by the Institution, may come out with a housewife's diploma and an amount of knowledge of domestic economy of all kinds which will make her a most valuable wife. No young man should look at a girl with a view to matrimony unless she possesses the housewife's diploma; and when they marry and settle down, they should select their cooks and housemaids from the girls trained at 3 Atholl Crescent.

PUBLICATIONS RECEIVED.

Army Medical Department Report for the Year 1889, with Appendix. 1891.

Atlas of Illustrations of Pathology, Fasc. 8. New Sydenham Society, Lond., 1891.

Harry Campbell, M.D., B.S. (Lond.),—Differences in the Nervous Organisation of Man and Woman: Physiological and Pathological. H. K. Lewis, London, 1891.

Geo. C. Kingsbury, M.A., M.D.,—The Practice of Hypnotic Suggestion. John Wright & Co., Bristol, 1891.

P. C. Knapp, A.M., M.D.,—The Pathology, Diagnosis, and Treatment of Intra-Cranial Growths. Boston, 1891.

Thomas Oliver, M.D.,—Lead Poisoning in its Acute and Chronic Forms. Young J. Pentland, Edin., 1891.

U. Pritchard, M.D.,—Hand-book of Diseases of the Ear. H. K. Lewis, Lond., 1891.

John J. Reese, M.D.,—Text-book of Medical Jurisprudence and Toxicology. P. Blakiston, Son, & Co., Philadelphia, 1891.

Charles E. Sajous, M.D., and others,—Annual of the Universal Medical Sciences. Fourth series, 5 vols. F. A. Davis, Philadelphia.

Sir James Sawyer, M.D.,—Contributions to Practical Medicine. Cornish Brothers, Birmingham, 1891.

Richard Sisley, M.D.,—Epidemic Influenza. Longmans, Green, & Co., Lond., 1891.

Noble Smith, F.R.C.S. Ed.,—Spasmodic Wry-Neck. Smith, Elder, & Co., Lond., 1891.

D. H. Tuke, M.D., LL.D.,—Prichard and Symonds in especial Relation to Mental Science. J. & A. Churchill, Lond., 1891.

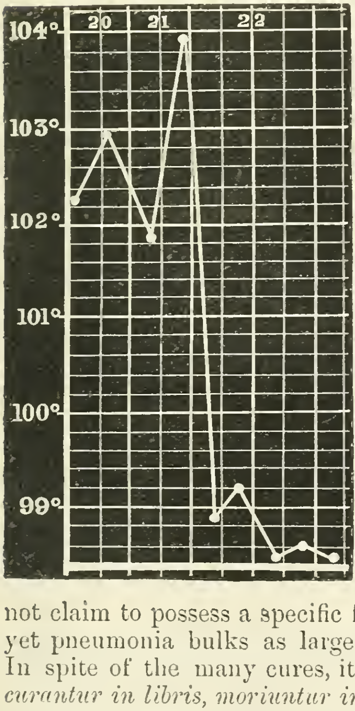
Twenty-sixth Annual Report of the Sanitary Commissioner with the Government of India. Calcutta, 1891.

Part First.

ORIGINAL COMMUNICATIONS.

I.—ON THE TREATMENT OF PNEUMONIA.

By George W. Balfour, M.D., LL.D., F.R.C.P.E., Physician to Chalmers Hospital.



Admitted July 21st.
Chloral and Digitalis commenced.

This chart, which tells its own tale, has only been selected in so far that it has been picked haphazard out of a number of similar charts.

It represents an average temperature chart of uncomplicated pneumonia when treated from the first as I shall presently describe. Every one knows that the mortality of pneumonia has been claimed to have been annihilated by Cullen and Gregory with their large bloodlettings; by Bouilland with his *coup sur coup* system of bleeding; by Lænnec with his contro-stimulant doses of tartar emetic; by Hahnemann with his infinitesimals, whereof Fleischmann pinned his faith to the decillionth of a grain of phosphorus; and by Bennett with his Restorative system. Nay, there is scarcely a medical journal published in which some one does not claim to possess a specific for the treatment of pneumonia, and yet pneumonia bulks as largely as ever in the mortality tables. In spite of the many cures, its victims are as numerous as ever; *curantur in libris, moriuntur in lectis.*

The lesson from this, as taught long ago by Skoda, is that pneumonia is a disease which tends not to dissolution but to resolution. A considerable number die because they are incurable under every system of treatment; a large proportion recover, because, so long as they are not positively killed, they will recover under any system of treatment. Pneumonia pure, simple, and uncomplicated, is a disease which naturally terminates in resolution—it may, therefore, be therapeutically played with with less risk to life than any other disease. Medical men of an experimental turn of mind have discovered this for themselves; but instead of recognising the true cause of their success, they have regarded it as phenomenal, and have complacently ascribed it to the paramount virtue of their own peculiar nostrum. The details upon which these statements are based are readily available, and need not now be more fully gone into. The conclusions to be drawn from them are:—

First, That there is no true specific for the cure of pneumonia.

Second, That a favourable ratio of recoveries to cases does not indicate any specially curative virtues in the remedy employed, but merely a concatenation of favourable conditions in the cases treated, and this may either be accidental or the result of careful selection.

Thirdly, That the remedy which most deserves our attention is one capable of relieving the most distressing symptoms, *tuto, cito, et jucunde.*

If combined with this relief to suffering we find a marked tendency to a shortening of the duration of the disease, precipitation of the crisis, in any considerable number of the cases treated, then we must recognise that if we have not hit upon a perfect cure, we have at least got about as near it as is possible in the present imperfect state of our knowledge.

Obsta principiis is a time-honoured motto, which in olden days was held to justify the most furious onslaught on the vitality of the patient, an onslaught forcibly imaged by the fabled club-blows of the hero of D'Alembert's apologue.[1] Now we are wiser, *obsta principiis* is still famous as of yore, but it has a different signification. When disease has commenced, when the patient has felt his need for treatment, we cannot arrest its onset, we can but modify its course, and obviate the tendency to death. Death in pneumonia, whether it arises from sudden syncope, from pulmonary œdema, or from gradual sinking, has failure of the heart as its beginning and its end.[2] In the treatment of pneumonia it is therefore of consequence to avoid all debilitating treatment, especially at the onset of the disease, when we are most tempted to interfere actively. Apparently the most venial of these activities, as it certainly is the most common, is the administration of a purge to relieve the *primæ viæ* in a case where a dirty tongue is obvious and other symptoms not very clear, as is often the case in the early stage of pneumonia. A purge is easily given, but it always fatigues, often exhausts, and may prove the first downward step in that declension which culminates a day or two afterwards in sudden collapse. Venial activity as it may seem, yet to purge a pneumonic patient after middle life is by no means free from danger; it has no influence on the affection of the lung, it does not even clean the tongue; the saburral condition, which no purgation can remove during the continuance of the disease, disappears like magic when the fever ceases. A careful shunning of even so trifling an initial depressant as a purge may obviate the necessity for an immediate rousing of the flagging heart, which so often and so suddenly becomes a matter of paramount importance, and should this need unfortunately arise it will bring with it no vain regrets.

---

[1] "Nature is fighting with the disease; a blind man armed with a club, that is the physician, comes to settle the difference. He first tries to make peace; and when he cannot accomplish this, he lifts his club and strikes at random; if he strikes the disease, he kills the disease; if he strikes Nature, he kills Nature"—that is the patient.

[2] "The danger in croupous pneumonia threatens principally the heart of the patient. Death results from insufficiency of the heart." Juergensen, Ziemssen's *Cyclopædia of Practical Medicine*, vol. v. p. 153.

Certain conditions which naturally depress cardiac vigour render precarious the maintenance of a life threatened by pneumonia; these are advanced age; pre-existing disease; and preceding exhaustion, bodily or mental, from whatever cause arising. These conditions cannot be eliminated, and they must render the prognosis more or less unfavourable, especially if more than one be present. Indeed, if we delete from the death record of pneumonia all those cases in which one or other of these conditions has been present, we practically eliminate all the fatal cases. No mode of treatment that can be devised can altogether nullify the ill effects of age, of pre-existing disease, or of exhaustion, yet even where one or more of these untoward elements are present appropriate treatment may be of essential service.

If there is one point in the treatment of pneumonia in which there is a general consensus of medical opinion, it is that when any of the conditions alluded to exist, depressing or perturbative treatment is especially to be shunned.

Once pneumonia has fairly commenced there are two morbid conditions connected with it which are supposed to be specially detrimental to the vigour of the heart: the one is excessive consolidation of the lung, and the other an excessive rise of temperature (fever).

Excessive exudation within the lung tissue impoverishes the blood, and must, therefore, act injuriously on a weak heart by enfeebling its tissue and starving its nerve centres; but as an obstacle to the circulation throwing a strain upon the right heart it is of small moment, as the instant the temperature falls convalescence proceeds uninterruptedly, the heart making no account of the apparent obstacle.

As for the fever, a great deal has been made of it, especially by German writers, and a high temperature undoubtedly exhausts nervous energy and enfeebles muscular power, and must consequently impair cardiac vigour. But the pyrexia in pneumonia is usually moderate, and an exceptional or dangerously high temperature may be accepted as an indication of some necessarily fatal complication. Antipyretic treatment of any specially active character—such as cold bathing—is therefore much less applicable to the treatment of pneumonia than to that of other diseases where the local lesion is of a less ominous character.[1] There is, however, one drug long used in the treatment of pneumonia which has the advantage of being both an antipyretic and also a cardiac tonic, and which from this combination seems to be worthy of some consideration.

In the early period of its use digitalis was employed as an antiphlogistic, as the equivalent of blood-letting;[2] and when the full action of the drug happened to coincide with the crisis of the disease, the rapid and often considerable fall of temperature—sometimes amounting to five or six degrees Fahrenheit in a few hours—must have accentuated its supposed antiphlogistic properties in a most remarkable manner. Where digitalis is employed in large doses, whether as an antiphlogistic or an antipyretic, the sudden fall of temperature following its use is often accompanied with a feeble and irregular pulse. This character of pulse has been associated with cardiac debility, and it has been assumed that digitalis enfeebles the heart, is for this reason to be shunned in the treatment of pneumonia, or is only admissible when the heart is strong and powerful. The case is quite otherwise, the rapid, feeble, and irregular heart of cardiac collapse following pneumonia, undoubtedly an indication of cardiac weakness, is best treated by large doses of digitalis, repeated at short intervals,[3] coupled with the free use of stimulants. The feeble and irregular pulse accompanying a critical fall of temperature in pneumonia, preceded by the use of full doses of digitalis, is quite a different story, and is not an indication of cardiac weakness, but of digitalis poisoning, such as might happen even in health from a similar free use of the drug. It is a symptom which is alarming, but apparently not dangerous, and it passes erelong safely away; when following a pneumonia, the recumbent posture must be strictly enforced and stimulants administered. It is very difficult to lower the pulse or depress the temperature in acute pneumonia by means of digitalis, large doses being required, sometimes as much as 100 or 120 grains.[4] When giving large doses of digitalis in pneumonia, symptoms of poisoning, with a feeble, irregular pulse, sometimes set in before the critical fall of temperature takes place. In these circumstances the crisis is apt to be accompanied with considerable collapse, with hiccough, vomiting, and sometimes stupor. To obviate this alarming and dangerous condition it is desirable, when treating pneumonia with large doses of digitalis, especially if continued for any length of time, that the dose should be much reduced, or the drug entirely set aside, just before the crisis is expected.[1] In some cases it has seemed as if large doses of digitalis forced an apparently critical fall of temperature without arresting the disease, the rusty sputa continuing for some days, along with a slow pulse and a low temperature.[2] There seems, therefore, nothing to be gained by pushing the drug in this extreme manner. When given in moderate doses throughout the disease, digitalis seems to be undoubtedly useful. In the first place, its antipyretic virtue probably aids in bringing about an early crisis, and in making it more decided; and in the second place, its tonic action on the heart enables us to keep that organ well in hand, may possibly prevent cardiac collapse in some cases, and certainly enables us, when collapse threatens, to rouse the failing heart with less loss of time than when digitalis has not been given from the commencement. When employed in the treatment of pneumonia, digitalis seems occasionally to cause the disease to abort; but when employed in large doses in the endeavour to secure this end, it is an uncertain remedy, and may even prove dangerous. When used in moderate doses, however, either as a substantive remedy or an adjuvant, digitalis is undoubtedly of great value; it occasionally seems to shorten the course of the disease, and it not infrequently saves lives which apparently without it would be lost.

---

[1] *Vide Pneumonia*, by Octavius Sturges, M.D., London, 1876, p. 238.

[2] *Vide Lancet*, vol. ii., 1837. p. 609, etc.

[3] I have known one drachm of the tincture given every two hours for twelve hours with complete success, a similar dose being given at longer intervals for some days.

[4] Lauder Brunton has found that the existence of inflammation inhibits the action of digitalis. *Vide Pharmacology, Therapeutics, and Materia Medica*, by T. Lauder Brunton, M.D., 3rd ed., London, 1891, p. 998. But this peculiarity in regard to digitalis seems to have been also known to Traube, who frequently

Besides those pre-existing conditions already referred to, which are so apt to determine the early occurrence of general as well as of cardiac exhaustion, there are, apart from temperature, several accessories of the disease itself which have a similar result, and which must be combatted if we desire to conduct our patient comfortably and safely through his illness. These are sleeplessness, pain, and cough; the two latter are frequently the cause of the insomnia, but sleeplessness itself is often only an indication, as it is certainly a cause, of nervous exhaustion. Opium has long been known to relieve these symptoms, but as it has no apparent effect in checking the disease, and may produce serious symptoms by causing retention of the expectoration, it has not been much used in the treatment of pneumonia except in moderate doses. Even

treated pneumonia with this drug. *Vide Gesammelte Beiträge zur Pathologie und Physiologie*, Berlin, 1871-78, Bd. i. S. 275; also, Bd. ii. S. 910.

[1] Traube, *op. cit.*, Bd. ii. S. 910.

[2] Traube has observed the rusty sputa and continuance of inflammatory action for so long as eight days following the apparently critical fall of temperature. *Vide op. cit.*, Bd. ii. S. 910.

for the insomnia opium is not in much favour, as a large dose is always required for the treatment of this symptom; and it is not always successful, sometimes aggravating the wakefulness and producing delirium.

Many years ago *chloroform* was employed in the treatment of pneumonia by several German physicians,[1] with very considerable success, only ten having died out of 303 recorded cases—3·3 per cent. And this success was all the more remarkable, that it was very evenly distributed among the various physicians. Moreover, chloroform, administered by inhalation, not only appeared to conduce to the recovery of the patient, but also relieved his sufferings. The pain vanished; the insomnia was replaced by a child-like slumber; the cough ceased, because there was nothing to expectorate, the rusty glutinous expectoration being rapidly changed to a scanty mucous phlegm; the temperature dropped; and the pulse-rate fell. In carrying out this treatment one drachm of chloroform was given by inhalation every two hours; it was expensive, troublesome to manage, and was alleged to be not always safe,—some even of the few deaths being credited to the chloroform, and not to the disease. The difficulties, danger, and expense of giving chloroform by inhalation were got rid of by giving it by the mouth,—one drachm of chloroform given thus producing safely results only to be obtained at some risk by the inhalation of one ounce. But the use of chloroform by the mouth was not found to relieve the pain so quickly as when it was inhaled; the general results were equally good, and the disease seemed as rapidly checked, but till this happened the pain continued.[2] Probably this might have been remedied by giving somewhat larger doses of chloroform, at first at all events, or by giving the chloroform at shorter intervals. Experimentation in this direction was happily rendered unnecessary by Liebreich's fortunate discovery of *chloral*, a drug which was supposed by its discoverer to act by chloroform being set free from it in the blood. One hundred grains of chloral mixed with thirty grains of slaked lime in one ounce of distilled water, and carefully distilled, yields not less than seventy grains of chloroform, so there was a reasonable foundation for this belief; and though now-a-days it is alleged that after its administration no chloroform is to be found in the blood, there is no doubt that the actions of both drugs are very closely allied, though chloral is very much more convenient of administration.

Chloral in one large dose of from seventy grains to two drachms has been strongly recommended as a remedy for insomnia, but such a dose is unnecessarily large and even dangerous. If called in at a late period of the disease, when persistent insomnia threatens exhaustion, and it is absolutely necessary to secure sleep as the best chance of saving the patient, the best method of administering the chloral is to give forty grains of Liebreich's chloral at once, and forty grains more if necessary every half hour till three doses (120 grains in all) have been given. A good many succumb to the first dose, a number more to the second, but I have not yet seen the patient who did not yield to the third. The patient falls into a quiet and restful slumber, from which he awakes refreshed, and not infrequently well, the sleep being accompanied by a favourable crisis.

---

[1] By Wucherer, Baumgärtner, Varrentrap, etc. A summary of this treatment will be found at p. 496 of the *Lancet* for April 10, 1869.

[2] *Vide Lancet*, April 10, 1869, p. 496, "Three Cases of Pleuro-pneumonia; Chloroform Treatment."

A large dose of chloral causes a considerable, and finally a fatal depression of temperature, apparently due to a lessening of the production of heat; it is therefore an antipyretic. Chloral slows the heart by paralyzing the cardiac ganglia, and it dilates the arterioles by paralyzing the vaso-motor centres. Chloral also acts as an excellent hypnotic, apparently from its direct action on the brain itself; it is also an analgesic, and it diminishes and ultimately abolishes all the reflexes. It would not be easy to find another drug with a concatenation of properties so suitable for the treatment of pneumonia as those which chloral possesses, and it is not strange that it has been found most useful.

In moderate doses the antipyretic action of chloral may be but slight, but it exists, and is an action in the right direction. The hypnotic action prevents insomnia, and so recuperates exhaustion, the analgesic action aiding on the same lines. The diminution of the reflexes tends to cut short the disease; for if we regard pneumonia as a restorative reaction to an injury received, then this action of chloral may modify these reactions, and check wholly or in part the series of organic changes through which diseased action, when unmodified, must run; and this action will be specially valuable in those exhausted, and therefore erethistic, constitutions in which these reactions are most apt to be excessive and most dangerous. In this theory of inflammation, also, dilatation of the capillaries is not without its use; the freer circulation sweeps away the stasic elements in its torrent, and the influence of the morbid stimulus gradually dies away as the normal nutrition of the part becomes fully re-established.

On the other hand, if we regard a pneumonia as due to the local action of a coccus, a bacillus, or any other form of microbe, the flushing of the part affected by a free circulation of healthy blood cannot be a matter of indifference; but by flooding them with phagocytes must tend to cut short the disease by destroying its cause.

Whether, therefore, we hold old-fashioned or new-fashioned views as to the causation of pneumonia, the treatment of it by chloral would seem to be equally appropriate from a physician's point of view; while a patient cannot but regard as both agreeable and suitable a remedy which soothes pain, stops cough, and relieves insomnia. Chloral does all this, but it does more, it really seems to shorten the duration of the disease; or, as we may put it, to favour an early crisis. Having seen pneumonia treated in almost every imaginable manner, from large bleedings to coloured water, I have no hesitation in saying that, so far as I am capable of judging, the treatment of pneumonia by chloral is that which gives the patient most relief from his sufferings, which more than any other favours an early crisis, and which appears to have no tendency to increase the mortality, if it does not indeed diminish it, which would be difficult to prove.

For reasons already given, I always give in pneumonia chloral —Liebreich's chloral, none other is safe—dissolved in infusion of digitalis. The dose of chloral and of digitalis must vary with the age of the patient: for an adult I prefer to give for a first dose twenty grains of chloral in half an ounce of infusion of digitalis, the subsequent dose being ten grains of chloral in half an ounce of infusion of digitalis every four hours, continued till the temperature falls to normal, then to be replaced by some appropriate tonic. After the first dose, if it be one of twenty grains, or after the second or third dose, if we begin with ten grains, the pain and cough cease, the patient doses all day and sleeps sound during the night; the rusty glutinous sputa either cease entirely or become changed to a scanty mucous phlegm easily expectorated, the pulse drops, the temperature falls, the disease is arrested, and the patient gradually convalesces. A jacket poultice is a useful adjuvant, which may be, however, very advantageously replaced by a sheet of cotton wool. An appropriate diet cannot, of course, be dispensed with.

Nearly four years ago I recommended this treatment to a medical friend in the country. A short time afterwards he wrote:—"A girl, 15 years old, who had not been well for a few days, was seized on Friday with a hard, dry, frequent cough (no expectoration) and fever. On Saturday, when I first saw ner, her temperature was 103°, respiration 40, pulse 130. Had not slept all night; complained of severe pain about the right nipple. There was dulness over the right apex, bronchial breathing, and bronchophony, with a distinct fine crepitant râle. I gave her fifteen grains of chloral and fifteen minims of tincture of digitalis, and shortly after this she fell asleep. In the evening, when I saw her again, she had just wakened; her temperature was 102°·4. She soon fell asleep again; slept well all night, though she wandered a good deal. Next morning she felt better; temperature 101°. Has not coughed once since taking the draught, and the pain of which she complained disappeared with the cough." This patient convalesced rapidly. A few days subsequently he wrote:—"I again tried your draught of chloral and digitalis the other day in a case which I thought was going to be pneumonia. The case was that of a woman, aged 28. The night before I saw her she had a rigor, or at least her feet chilly and shivering; this was followed by sensation of heat, pain in the left side, headache, and cough; no expectoration. She did not sleep. I saw her in the morning, and found her pulse 104, respirations 34, temperature 104°. Chest normal on palpation; on percussion slight hyper-resonance over the left base; on auscultation the respiratory murmur was rough, with some crepitant râles accompanying the first few inspirations. She got her draught, and next morning her temperature was 100°, pulse 80, cough gone; chest examination normal. Next day but one the temperature was normal, and *herpes labialis* had appeared. This looks like a case of pneumonia cut short, doesn't it?" This may or may not have been the case, but those who employ the treatment recommended, and carry it out as directed, will soon have a number of charts not very dissimilar from that at the head of this paper to exhibit, to say nothing of the comfort they will have conferred upon all their patients.

II.—THE DISORDERS OF SPEECH.

By John Wyllie, M.D., Lecturer on Medicine in the Edinburgh School; one of the Ordinary Physicians to the Royal Infirmary, Edinburgh.

(*Continued from page* 314.)

Part I.—The Functional Disorders of the Vocal Mechanism. —*Continued.*

2. *Physiology of Whispering; Hysterical Aphonia; Hysterical Mutism; other forms of Functional Paralysis of the Adductors; Functional Spasms; Paralysis of the Abductors.*

In our last paper, it was shown that speech is the product of two mechanisms acting in co-ordination with each other, viz:—the Vocal and the Oral Mechanisms; and these were compared to the bow-hand and the string-hand of the violinist. It was shown, further, that Stammering is a disorder of speech which, in the great majority of cases, is due to a want of promptitude on the part of the Vocal Mechanism in attacking the first syllables of words.

In the present paper, it is proposed to consider some other nervous derangements of speech in which the Vocal Mechanism is again chiefly at fault. It will be shown, however, that, in the derangements now to be considered, the fault is not a want of promptitude, but either, on the one hand, a want of power, or, on the other hand, a spasmodic disturbance of action.

Before entering upon the consideration of this group of disorders of the Vocal Mechanism, it may be convenient here to consider, by way of preface, the Physiology of Whispering, a subject of great importance in its relations to these derangements.

Physiology of Whispering.

What are the conditions necessary for the production of whispered speech? Regarding this question there is still much difference in the views of physiologists; and I may be allowed to express the opinion that the views taught by the text-books most commonly used in this country are not correct.

In Foster's *Physiology* it is held that—"Whispering is speech without the employment of the vocal cords, and is effected chiefly by the lips and tongue. Hence, in whispering, the distinction between consonants needing, and those not needing, voice, such as b and p, becomes for the most part lost."[1] Landois and Stirling remark—"When sounds or noises are produced in the resonating chambers, the Larynx being passive, the Vox Clandestina, or Whispering, is produced. When the vocal cords, however, vibrate at the same time, audible speech is produced. (Whispering therefore is speech without voice)."[2] And in the latest edition of the *Encyclopædia Britannica* it is said—"If the vocal cords are called into action, and the sounds thus produced are modified by the muscular movements of the tongue, cheeks, and lips, we have vocal speech; but if the glottis is widely opened and the vocal cords relaxed, the current of air may still be moulded by muscular apparatus so as to produce speech without voice, or whispering."[3]

The view thus expressed is as old as the time of Arnott (1827), and probably a great deal older. Arnott says—"Whispering is articulation without voice; that is to say, articulation while breath only is passing."[4] In recent times, it has derived its chief support from certain experimental researches in Paris, which will be presently referred to.

If this view were correct, whispering would be speech produced by the simple agency of the oral mechanism, without the co-operation of the larynx. This, if we may use again the simile of violin-playing, might be considered as equivalent to the production of melody by the agency of the string-hand alone, the bow-hand being out of employment.

A very different view is held by many who have paid special attention to the subject. This view was first promulgated by Brücke in 1856,[5] and is thus explained by Von Meyer in his work[6] published in 1883:—"Now it is not only possible to produce all the vowels and resonants in a whisper, but also to mark the difference between the 'hard' and 'soft' consonants. Undisturbed activity must therefore be allowed to those relations by which the laryngeal tone is moulded into those sounds. Thus we find that absence of tone cannot be regarded as the characteristic of whispering, but that we must seek some other element which will so stand in the place of tone as to be equally affected by those modifying influences, and thus perfectly replace it as an element of speech.

---

[1] Foster's *Physiology*, p. 661.

[2] Landois and Stirling, p. 760.

[3] *Encyclop. Brit.*, articles on Stammering and Voice, by Prof. M'Kendrick.

[4] Arnott's *Physics*, 5th ed., p. 640.

[5] *Grundzüge der Physiologie und Systematik der Sprachlaute* (Wien, 1856). (Unfortunately now out of print, so that I have not been able to get a copy.)

[6] "Organs of Speech," *International Scientific Series*, p. 273.

"This substitute for tone must have its origin in the larynx, or its subsequent fate in the air-passages would not be so entirely analogous to that of the tone produced in the larynx. Brücke takes the very probable view, that in whispering a *noise* is formed in the glottis instead of the tone which constitutes an element of loud speech. This noise is no other than that which has been described above as the *Strepitus continuus spirans* of the larynx."

These views of Brücke, arrived at by observation and reasoning, without the aid of the laryngoscope, were subsequently submitted by Czermak to the test of laryngoscopic investigation, and his results were laid before the Imperial Academy of Vienna in 1866.[1] Czermak entirely confirmed the conclusions of Brücke, and proved that in whispering a fricative noise is produced at the glottis by the partial closure of the vocal cords, which close and open during whispered speech very much in the same manner as they do in ordinary vocal speech. There is only this peculiarity in the action of the vocal cords, that, whereas in vocal speech the air passes the glottis through a narrow chink between the vibrating cords, in whispering the greater part of the air is made to pass through a triangular opening in the posterior part of the glottis, between the projecting parts of the arytenoid cartilages, whose bodies remain apart, although their vocal processes are more or less closely approximated. This fricative noise plays, in whispering, exactly the same part that is played, in vocal speech, by the sonorous tones of the voice. It is the material out of which the vowels are formed, and it adds itself, as an essential element, to those consonants, which, in vocal speech, contain voice. Anyone can convince himself of the truth of this view by personal observation with the aid of the laryngoscope. The fricative noise in whispering can be made soft or loud at the will of the speaker. The carrying power of a "stage-whisper" is thus made easily intelligible.

---

[1] *Wiener Akademische Sitzungsberichte*, lii. Bd., 1866; also Czermak's *Gesammelte Schriften*, p. 750. It appears to me very unfortunate that, in this valuable investigation, Czermak was led to the opinion that the **h** sound in articulate speech is pronounced in the same manner by the larynx, as the *spiritus asper* of whispering. In my first paper, I expressed the opinion that the aspirate **h** is the voiceless fricative of the posterior stop-position; and this, I believe, was the view enunciated regarding it by Brücke. That it is the correct view, any one can prove for himself, by deliberately pronouncing the **h** sound in the word **here**, and attending to his own sensations while doing so. When the tongue is pulled out for laryngoscopic examination, no true **h** sound can be produced so long as the parts within the larynx remain visible. If the attempt is made to pronounce **h**, the back part of the tongue is carried so closely up against the palate as to interfere with a view of the larynx. The *spiritus asper* of the larynx is, at the best, but an imitation of the true **h** sound.

It might be objected to this view that patients have been known to whisper even after the total excision of the larynx; but there is every reason to believe that in such cases the condition of the parts was such as to permit of the production of a fricative noise at or about the level of the larynx, which could be utilized in the mouth for the production of speech.[1]

The question about the true physiology of whispering is really an important one practically. If the larynx takes no part in whispering, then, in acute laryngitis, it would be good practice to allow the patient to whisper as much as he chooses; but if the larynx has work to do in whispered as in vocal speech, clearly the proper prescription would be to forbid even whispering, and allow the inflamed parts to have perfect rest. Further, in connexion with hysterical disablement of the vocal cords, to be presently considered, if the larynx does not work at all in whispering, its complete paralysis will not render the patient mute or speechless; but if its action is necessary even for whispering, then its complete paralysis means complete mutism. I thoroughly believe that the latter is the real state of the case. With a little practice one can allow the air to escape freely into the mouth, through the widely open glottis, whilst the oral mechanism is doing everything that is necessary on its part for the production of audible speech; and yet no speech will be audible, on account of the inaction of the larynx. By way of experiment, I articulated, close to the ear of my house-physician, the line "I shot an arrow into the air"; and, although he felt the breath distinctly impinging upon his ear, he could only make out clearly the fricative sound of **sh**, and much less distinctly that of the **r's**.

---

[1] In the well known case of total excision of the larynx effected by the late Dr Foulis of Glasgow, the patient was enabled to speak, even in a loud though monotonous voice, by the insertion into the laryngeal cavity of a reed like those of a concertina. But such a reed can never permit of the elaboration of perfect speech. It would necessarily throw voice into all the consonants, even those which ought to be voiceless; so that the first or voiceless column in our alphabet would be unrepresented. In the speech of such a patient, all his **p's**, for example, would be **b's**, and his **s's**, **z's**.

It would be interesting to consider in what degree the parts at the back of the throat are capable of assuming the voice-producing functions of the Larynx, after that organ has been totally excised, or has been cut off from connexion with the Pharynx by stenosis of its orifice; but that is a subject which cannot well be considered in this paper. For information regarding it, however, the reader may be referred to—(1) a paper by Professor Czermak (*Gesammelte Schriften*, i, 2, p. 598), in which he describes a case, where communication of the Larynx with the Pharynx had been totally cut off by disease; (2) a case of total excision of the Larynx, recorded by Dr Hans Schmids (*Archiv für Klinische Chirurgie*, xxxviii., 1889, p. 132), in which the air passage was entirely cut off, in process of cicatrization, from the cavity of the Pharynx; (3) another case of total excision of the Larynx, reported by Dr Greville Macdonald and Mr Charters Symonds in the *British Medical Journal* for 1889, p. 996. In both these latter cases, curious to say, a real, though rough, voice was produced in the absence of the Larynx, by other parts at the back of the throat.

The simile of the violinist thus holds good with regard to whispered speech, as well as with regard to speech that is vocal. Both bow-hand and string-hand are necessary for its production, but the bow-hand is producing a fricative noise, instead of a musical resonance. In the absence of a laryngeal element in speech, the only elements of our alphabet which can still be produced are those of the first or voiceless column of consonants, and, even among these, the explosives are barely audible, because there is no sound from the larynx that can have communicated to it an explosive beginning or a stop-like termination. Without the agency of the glottis, the two voiced columns of the consonants and the whole of the vowels are inaudible. In the absence of these, the patient is necessarily mute; the first or voiceless column being insufficient in itself for the purposes of speech.[1]

We now pass to the consideration of the disorders of speech which we propose to take up in this paper.

Hysterical Aphonia.

This is a condition of extremely common occurrence in hysterical patients, and, naturally, it is most frequently met with in those of the female sex. Like the other manifestations of hysteria, it may be developed at any period of life; but, in the majority of cases, it occurs either during the earlier years of womanhood, or in the later years at or about the climacteric period. The exciting cause is very frequently some emotional disturbance; and thus again it is like the other phenomena of hysteria. In many cases, on the other hand, the patient being of hysterical constitution, it owes its beginning to the mere catching of a cold, with attendant hoarseness. The difference between such a patient and an ordinary person with cold is, that, in the former, the aphonia remains for a long period, it may be for months, after the actual catarrh has passed off, whereas in the latter the voice returns at once when the catarrh is recovered from. It may thus begin more or less gradually with a cold, or appear suddenly after emotional excitement. Occasionally it is produced by some hysterical seizure, such as a fit, the aphonia remaining after the fit has passed off. Lastly, in not a few instances, it appears in hysterical subjects spontaneously, without any apparent exciting cause. Patients who have once had hysterical aphonia are more or less liable to a recurrence of it. As a rule, it admits of immediate cure by suitable treatment; but there are cases which prove exceedingly obstinate, in spite of any treatment that can be employed. Such cases are cited, for example, by Sir Morell

---

[1] As regards the voiced consonants, perhaps it would be better to say that the attempt to produce them without the larynx would result in the production of their voiceless equivalents.

Mackenzie.[1] I have myself met with one case of this kind. I saw the patient for the first time twenty years ago, in consultation with the late Dr Matthews Duncan; and, for the second time, four or five years ago. During the whole of this period, the lady had remained aphonic, although perseveringly treated by several specialists.

Laryngoscopic examination of a case of hysterical aphonia shows that the adductor muscles of the arytenoids and vocal cords are in a state of paresis, though not of complete paralysis. They are strong enough to bring the arytenoids and cords into close enough approximation for the production of the *spiritus asper* of whispering, but they are not strong enough to bring the parts sufficiently together for the production of vocal tone. In the great majority of cases the chink of the glottis is straight or linear in its edges, its only fault being that it is too wide; and one may therefore conclude that all the adductor muscles are equally involved in the paresis. But there are exceptional cases, well figured by Mackenzie and others, in which individual adductors are specially at fault. In some of these the Rima Glottidis presents the form which it assumes in normal whispering, the greatest opening being a triangular one at the posterior part of the glottis, between the projecting parts of the arytenoid cartilages; so that the weak muscle is here evidently the inter-arytenoideus, which ought to have brought the bodies of the cartilages into close apposition. In others an elliptical slit, widest at its middle, is left between the vocal cords, owing to the weakness of the thyro-arytenoidei muscles, which lie alongside of the cords, and ought by their contraction to support and keep them in apposition during phonation. Or the vocal processes of the arytenoid cartilages are too wide apart for phonation, owing to the weakness of the crico-arytenoidei laterales. Or, again, the Rima Glottidis, instead of forming a straight line, presents a sinuous aspect, owing to the weakness of the crico-thyroid muscles, which stretch the cords during phonation. All of these latter appearances, however, are exceptional; the common condition being the one of general paresis of the adductors first described.

Although the voice proper is thus absent in hysterical aphonia, it can, in a great many cases, be evoked during the act of coughing; and its retention of normal characteristics during a cough, together with the absence of any laryngeal pain or irritation, may sometimes help to lead one to a correct diagnosis, without the aid of the laryngoscope. In severe cases, however, the voice is sometimes absent even in coughing; though the cough rarely or never assumes that husky or laryngeal character which is suggestive of intra-laryngeal disease.

In treatment, it is well, at the outset, to inspire the patient with a confident hope of immediate cure: and with that view, she may be asked to cough loudly; so that, if the cough be vocal, her attention may be directed to the vocal element in it. In a very great number of cases, the only further treatment that is necessary for the immediate restoration of the voice is to assure the patient that you are about to bring it back, and, allowing her to believe that you are performing something of the nature of a curative operation, to introduce the laryngoscopic mirror into the mouth in the usual way, and to ask her, in a commanding manner, to say or sing **ah**. Two or three commands of this sort very generally suffice to bring back the voice. The voice remains with the patient after the operation is over; and she often shows great astonishment at finding herself thus at once able to speak quite freely in a perfectly natural tone. When this simple procedure does not suffice, other means must be tried. Dr Olliver of Boston recommends that the physician should compress the larynx slightly between his fingers, pressing the alæ of the thyroid cartilage inwards towards each other. This gives additional support to the vocal cords within the larynx. It is a means which I have employed in some cases with success. Another, and very efficacious method of treatment, is the use of the Faradic Battery. This can be employed either externally, the electrodes being placed one on either side of the box of the larynx, or internally, by means of the very valuable intra-laryngeal rheophore, invented by Sir Morell Mackenzie. In using this instrument, one electrode is fixed by means of a fillet to the box of the larynx externally, whilst the other—the rheophore—is introduced into the larynx itself by the mouth. When its extremity is in contact with the vocal cords, the circuit is closed by the pressure of the operator's finger upon a spring. A point to be borne in mind in using this instrument is, that the shock communicated through the delicate mucous membrane will be much stronger than the shock of the same current transmitted through the resisting cuticle of the operator's hand. The operator will therefore do well to bear in mind the golden rule of electro-therapeutics, and try the current upon his own person, before he subjects the patient to it. He can easily do this, by applying the outside electrode to the outside of his throat and the rheophore to the surface of his tongue. I have had one case at the Royal Infirmary, occurring in the person of an apparently robust young man, which resisted all other means of treatment, but was at once cured by the use of Mackenzie's intra-laryngeal rheophore; and the same treatment also cured the patient at once a second time, when, after a year or two, the condition recurred. Still another method of treatment which deserves attention is one also recommended by Mackenzie, viz., the inhalation of a stimulating vapour, such as that of ammonia. Some years ago, I had a patient, a young lady sent to me by my friend Dr Berry Hart, who resisted the laryngoscopic cure, being by that means only got to produce one note, and to read in a monotone; but who was subsequently cured, without my aid, on inhaling the vapour of the so-called ammoniaphone—an instrument which, at that time, was being much advertised in this city. A few drops of Liq. ammoniæ, sprinkled upon a piece of cotton wool, would probably have been equally efficacious. The element of faith is all-important in the treatment of these hysterical conditions. It need scarcely be added, that, in all such cases, it is desirable to attend to the patient's general health, and to prescribe such general tonic treatment and regimen as are appropriate in combating a constitutional tendency to hysterical manifestations.

---

[1] *Manual of Diseases of Throat and Nose*, vol. i.

Hysterical Mutism.

This is a subject which has, of late, been attracting much attention on the Continent. I do not know that much has been written about it, as yet, in English; but several cases have been recorded by Dr Wilks, in his *Diseases of the Nervous System*, and others by Wells, Bright, Willis, and Johnson.[1]

It is a very striking condition, occurring for the most part in patients who are obviously hysterical, but occasionally met with as a symptom existing *per se*, without any of the usual hysterical accompaniments or stigmata. It is very closely related to hysterical aphonia, both in its causation and in its tendency to ultimate recovery. Like aphonia, it often appears suddenly as a result of violent emotional excitement, such as fright, or as a result of a convulsive seizure. It frequently disappears with a suddenness equal to that of its onset; and, curious to say, the cause of its disappearance may be an emotional excitement or a fit, such as might originally have produced it. The difference between a case of Hysterical Aphonia and one of Hysterical Mutism is, that the aphonic patient, though the voice is lost, can still speak in a whisper, whereas the subject of hysterical mutism cannot speak at all, not even in a whisper; yet the intelligence and all the other faculties are maintained equally well in both cases, and the mute patient, if educated, can still with the utmost fluency give expression to thought in writing. I have, in my own practice, met with only one well-marked case of hysterical mutism. The patient was a young gentleman, who was brought to me some years ago by my friend Dr Sibbald, one of the Commissioners in Lunacy for Scotland. As this case presented the features of the condition most characteristically, I may be allowed here to insert, from my notes, a short abstract regarding it.

Mr X., aged 29, seen by me on the 15th of October 1886, was a tall, fair-haired, well-developed man, with a full, light brown beard; but was rather pale, and was somewhat excitable in manner. His history was shortly as follows:—

Five years before his visit to me, he had been working very hard, in preparation for the examinations required for his entry into the service of one of the public departments. During this period he sought recreation, from time to time, in boating; but it was thought by his friends that he exerted himself too much in that way. He was also, unfortunately, at the same time, subjected to a good deal of emotional excitement, owing to circumstances of a personal nature. It was when suffering from the exhaustion and disturbance produced by these various causes, that he first began to be affected with seizures, which his medical attendant believed to be of the nature of catalepsy. These attacks began with a dropping of the jaw, and produced a loss of all muscular power for several hours, without any loss of consciousness. They continued to afflict the patient from time to time, at intervals of two or three months, up to the date of his visit to me. From the first, the attacks always deprived the patient of the power of speech during their continuance; and gradually these periods of mutism became more prolonged, until, about a year after their first occurrence, the mutism became permanent. The fits had changed in their character some months before I saw him: instead of being passive during their existence, the patient had become the subject of violent hysteroid movements, throwing his limbs about, clenching his hands, and striking his head forcibly if allowed to do so. The mutism had existed continuously for about four years before his visit to me.

---

[1] See collections of cases by Cartaz and others, to be presently referred to.

When, five years before I saw him, the patient had thus broken down, he abandoned the intention of taking service in the public department, and emigrated to one of the colonies. Here he obtained employment in an office, and lived in comparative comfort, though mute and still subject to recurring attacks of the hysteroid seizures. He remained in the colony four years.

About a year before I saw him, he had met with a melancholy accident, when sailing with a companion on an inlet of the sea. His boat had been capsized, and his companion had been drowned. During the period of violent excitement which naturally attended upon this accident, the patient had cried for help; but on being rescued he had become mute as before. These cries for help were the only words he had uttered for years. During the whole period of his mutism, he was reported to be restless at night, and to groan, and even to cry out, in his sleep; but it was remarked that he never, even then, uttered any articulate words.

When I saw him, three months after his return to this country, he was evidently quick and intelligent; and he was very prompt in replying to questions by means of pencil and note-book which he carried for the purpose. When asked to pronounce a word or utter a vowel sound, he could emit no laryngeal sound, not even a whisper. He only made grimaces with his mouth. (Unfortunately I did not make a note of the specific character of the labial movements.) Persevering attempts were made to get the patient to pronounce some words, or at least to emit some vowel sounds from the larynx, but without result. Dr Sibbald afterwards informed me that the patient was much exhausted by the examination, so that on going home he had an exceptionally prolonged succession of his hysteroid seizures.

He was brought to me a second time a few days after his first visit, but the examination on this occasion was not so exacting. At this visit it was found that when the patient coughed the ordinary vocal element was present in the cough, and presented its normal characteristics. This observation was made use of, and the patient was made to cough in imitation of coughs made by myself; each succeeding cough having added to it a more and more prolonged vocal element, until the cough ended with a prolonged sound like "ah." The patient imitated thus far faithfully; but when asked to sing out the "ah" sound without the initiatory cough, he became as mute as before. He was asked to note well the fact that his larynx could still produce natural voice in coughing, and he was assured that in course of time he would completely and perhaps suddenly recover his voice for the purposes of speech.

The subsequent history of this case is instructive. Some months after I had seen the patient, when he was living quietly at home in the country, he went out one evening to dine with a friend in the neighbourhood. At first the conversation was, no doubt, carried on on his part in writing, as usual; but when the evening was somewhat advanced, a change occurred, and the patient, to the delight of himself and his friend, began to express himself with perfect freedom by word of mouth. The sitting seems to have been somewhat prolonged, but the patient continued to retain his powers of speech; so that when, at a late hour, he returned to his own home, he greatly surprised his friends by his powers of expression. Next morning, however, he was as mute as ever, and had once more to have recourse to writing.

Some months after this incident, the patient returned to the colony where he had formerly resided; and soon after his arrival he suddenly regained his power of speech. One Sunday, upon meeting his sister when she was walking home from church, he suddenly found himself able to converse in an ordinary way. He had thus been mute almost continuously for about five years. Since his recovery there has been no recurrence of the mutism.

Although it is only a few years since the title Hysterical Mutism was invented, cases of the condition were described under various titles as long ago as the middle of last century. Later, about thirty years ago, a number of cases were put upon record under the title of Functional Aphasia. Among others, several were published in 1874 by Kussmaul[1] under this title. The title Hysterical Mutism was first given to the condition in 1883 by Professor Revilliod of Geneva, who wrote a paper on the subject that attracted much attention. In 1886, Professor Charcot began to make the condition widely known to the profession by means of his clinical lectures. In the same year his assistant, M. Cartaz,[1] published twenty cases collected by him from various sources. This paper contains also an excellent account of the literature of the subject. In the same year, 1886, a similar collection of cases was published by Dr H. Bock[2] of Berlin, who has the merit of first showing that Hysterical Mutism, unlike Hysterical Aphonia, occurs with equal frequency in both sexes. Later, in 1888, Dr Marcel Natier[3] of Bordeaux, published the largest collection of cases that has yet been made. He confirmed Bock's conclusion, that the condition was as common in the male sex as in the female. As this is the latest and largest collection of cases, it will be specially referred to presently.

---

[1] Kussmaul's article on Speech, Ziemssen's *Cyclopedia*, vol. xiv.

The cases put upon record by Charcot are very illustrative. In his *Leçons sur les Maladies du Système Nerveux*, vol. iii. p. 422, he devotes the twenty-sixth lesson to Hysterical Mutism; contrasting a well-marked case of it with one of that partial mutism which results from glosso-labio-laryngeal paralysis. In his *Leçons du Mardi* for 1888–89, he returns at p. 247 to the subject, devoting his twelfth lesson to the description of a very interesting case of hysterical mutism, which, along with other grave hysterical manifestations, had resulted from hypnotism, practised upon the patient by a professional "magnetiser." In the first of these lessons, M. Charcot not only, in his peculiarly vivid manner, describes the symptoms, but also devotes some space to the consideration of the nature and causation of the condition. He shows that there are many features shared in common by hysterical aphonia and hysterical mutism. They occur in the same type of patients, are produced by similar exciting causes, and are not unfrequently found to alternate with each other in the same patient, the aphonia in some cases passing into mutism, and the mutism in other cases passing into aphonia. Obviously the mutism is the more severe condition of the two. It implies absence even of the power of whispering, as well as of that of speaking aloud.

I think it unfortunate that Charcot has been led to adopt the view of those physiologists who regard whispered speech as the product of the oral mechanism alone, without any participation of the laryngeal. He says, in the first lecture referred to, "Whispering, gentlemen, is nothing else than a language spoken and articulated. This phenomenon—remark it well—is absolutely independent of laryngeal voice: this fact has been demonstrated experimentally in the most conclusive manner, in the laboratory of M. Marey in

---

[1] *Progrès Médical*, 1886; and Appendix to Charcot's *Leçons sur les Maladies du Système Nerveux.*

[2] *Deutsche Medizinal-Zeitung*, Dec. 1886.

[3] *Revue mensuelle de Laryngologie d'Otologie et de Rhinologie*, Nos. 4, 5, 8, and 9, 1888.

1876, and also by M. Boudet of Paris in 1879. These authors have, by means of the graphic method, conclusively proved that in whispering the larynx takes no part, the vocal cords not entering into vibration. The air then traverses the larynx as it traverses the trachea: it traverses an inert tube. That is all." According to this conclusion, M. Charcot must regard the larynx as inert alike in aphonia and in mutism, and he has to search elsewhere than in the larynx for the cause of the dumbness which distinguishes the latter from the former condition. He has to suppose that in every case of mutism the oral articulative mechanism is also disabled. He accordingly looks to the higher motor centres for speech, and he believes that in mutism there is a cortical disablement that is not present in aphonia. He concludes, page 427,—"There is here then, in short, a motor aphasia, and, I add, purely motor: a variety rare, very rare, in the domain of the common organic aphasiæ, with which there are found most frequently associated in diverse proportions other troubles of interior language, such as word-blindness, or word-deafness, or, again, agraphia."

With great respect for the opinion of an authority so eminent, I must be allowed to express the belief that this explanation does not cover the whole ground: in particular it fails to explain in any way the very close connexion that is known to exist between Aphonia and Mutism. It appears to me that, on this subject, M. Charcot has been misled to some extent by the erroneous conclusions of the physiologists whose views he cites regarding the nature of whispering. As already explained, I thoroughly agree with those physiologists who hold that the participation of the larynx is as necessary for whispered as for ordinary speech. It is a point upon which the reader may arrive at a conclusion by observation of the process of whispering when practised by himself. Let him whisper in a "stage whisper," which is merely the ordinary whisper exaggerated, and I am mistaken if he will have the least inclination to regard whispering as an act which can be carried on without the participation of the larynx. Or, still better, let him sing in a whisper; which, after a little practice, he will be able to do, in tune, and yet entirely without voice.

Holding, as I do, that there can be no speech without the co-operation of both mechanisms, I believe that the disablement of either the one mechanism or the other may produce mutism. I believe that in the majority of cases it is the vocal mechanism that is at fault, and that in such cases the condition of hysterical mutism is essentially the same as that of hysterical aphonia, only more advanced. This view explains at once the transitions from the one to the other already referred to, and the existence of so many features which are common to both. These transitions and common features are well illustrated by the twenty cases collected by M. Cartaz, and appended to the third volume of the *Leçons* already quoted from. M. Cartaz, however, holds the same physiological views, and has the same theories as M. Charcot.

Quite recently the subject has been considered by another distinguished pupil of M. Charcot—namely, Professor A. Pitres of Bordeaux—in his recent work on Hysteria.[1] He describes a very interesting case, and cites the treatise of M. Natier, who has collected from various sources a great many cases of this condition. But M. Pitres unfortunately does not enter into any discussion on the exact relationships of mutism and aphonia.

The paper by M. Natier is an important one. He has collected, in all, seventy-one cases. Although the views expressed by him regarding the nature and etiology of the condition are not in any way different from those held by Professor Charcot, I think a careful study of the cases makes it evident that they can be grouped into several classes. It seems clear to me—(1) that, in a number of the cases, the mutism may be explained by the simple disablement of the Vocal Mechanism ; (2) that, in others, the mutism has resulted from a disablement of the mechanism of Oral Articulation, the vocal mechanism being intact ; (3) that, in a few, Both Mechanisms are involved ; and, lastly, that, in some cases, there are important Complications which deserve to be specially mentioned.

Class 1.—As an example of the first class, in which there is simple disablement of the Vocal Mechanism, I would cite from the paper, Obs. IX.,—"A woman, 21 years of age, of nervous temperament. In consequence of a sore throat, which lasted eight days, she remained completely aphonic. All treatment was without result. When patient was seen a year afterwards, the voice was completely abolished ; in spite of the greatest efforts, the patient could articulate no sound nor produce the least intonation or cry." After eight months of further treatment without effect, the patient was cured by the use of endo-laryngeal electrization, which caused her to have a prolonged hysterical fit, after which, on waking next morning, the voice reappeared. Obs. III., V., VI., XVIII., and XXII. seem to belong to the same class.

Class 2, in which the mechanism of Oral Articulation is disabled, is well represented by Obs. II., communicated to M. Natier by M. Pitres. Patient was a young woman of twenty-one. Without entering into details, it may be said that she could emit clearly only one sound, viz., the vowel-sound a, the pronunciation of the other vowels being very defective. The emission of this vocal sound shows that her laryngeal mechanism was unaffected. She could not at first articulate a single consonant, but, after persevering attempts, she was got to pronounce the consonants b, f, l, p, and t ; and, with great hesitation, the syllables (pronounced in the French manner) **bas, fa, la, pas, tas.** "After a quarter of an hour of repetition of these five words, she is shown (by analyzing the movements) the articulation of the other consonants, and, after about half an hour of exercise, she can pronounce all the consonants of the alphabet followed by an **a**. It is in vain that one tries to make her pronounce the same consonant followed by another vowel. It is well to remark that she was nevertheless in full possession of her intelligence." From this time the patient progressed favourably, and was soon able to pronounce easy words, such as "Bonjour, Monsieur, Madame," etc. She soon began to speak and to make herself understood, although with much difficulty, the tongue appearing embarrassed in its movements. Next day she spoke very well, without any hesitation and without a shade of difficulty.

---

[1] *Leçons Cliniques sur l'Hystérie*, 1891.

Class 3, in which Both Mechanisms seem to be involved, is illustrated by Obs. LV. The patient, a woman aged 43 years, lost her voice in October 1884, so that she could only speak in a whisper, and felt much fatigue in doing so. During the summer of 1886 the voice disappeared completely, so that she was not only affected with aphonia, but with a veritable mutism.

The voice was restored when the patient was under treatment with hypnotism. The physician caused the patient, when in this condition, to cough, and to clear the throat sonorously. He first made these sounds himself, and then caused the patient to imitate them; afterwards he got her to produce them of herself at command. He then passed to the pronunciation of vowels, and soon obtained **e** and **a**, a little later **o**, and with great difficulty **i** (ee), and then **u**, pronounced ou. Later still, he combined the vowels with the easiest consonants—the labials, in **em, am, pa, po**, etc.,—as one does for children who are being taught to read. Gradually in this manner the speech was restored, and eventually became perfect. Obs. LXXI. is also a good example of this 3rd class.

Among the Complications mentioned are,—(1.) Agraphia, in Obs. LXX., a case recorded by Charcot in 1888. There was, in this case, no word-blindness nor word-deafness. The case is described as one of Hysterical Apoplexy, which produced unconsciousness for five or six hours, and resulted in paralysis of the right arm, and paresis of the right leg. As patients with hysterical mutism, when educated, almost always write with perfect ease, the presence of agraphia must render the diagnosis exceptionally difficult. (2.) Temporary Deafness, exhibited in Obs. LVIII. This renders the patient for the time being a deaf-mute, but questions are understood if put in writing. (3.) Temporary Blindness has been observed in some cases.

I believe that the study of M. Natier's collection of cases thoroughly justifies the above classification. It will be observed that it is the same classification that I have already proposed for the varieties of stammering, with this difference, that the mechanism involved is not affected by a mere want of promptitude, but by a want of power, or, to express it in another word, by paralysis. If the view regarding the physiology of whispering which I have advocated is accepted by the reader, he can have no difficulty in accepting also this classification of the varieties of hysterical mutism; but if he takes the other view of whispering, and regards it as an act of the oral mechanism alone, without co-operation of the larynx, he will not be able to accept the classification, but must refer all varieties of mutism to disablement of the Oral Articulative Mechanism.

Whatever view be entertained regarding the Physiology of whispering, I think there can be no doubt that Hysterical Aphonia and Mutism alike must be referred, not to a mere peripheral disablement of the mechanisms of speech, but to a disablement of one or other or both of the cortical centres from which they are innervated. Many believe that the will itself is enfeebled, and that sudden cures are effected merely by the strengthening of the power of the will, through the influence of faith in the physician, and the tonic effects produced by a restoration of confidence.

If hysterical mutism of the first class and hysterical aphonia are essentially identical, the treatment already explained as suitable for aphonia would be equally appropriate for this variety of mutism: it ought to include both the employment of the local measures that have been described and the use of tonic remedies and regimen suitable to the constitutional state. For cases of the second class, it would seem rational to apply electricity and other local treatment to the organs of oral articulation, such as the Tongue and Lips, instead of to the Larynx; and in cases of the third class the local treatment of both mechanisms would seem to be indicated.

For the examination of a case of hysterical mutism with a view to determine the class to which it belongs, I would propose that attention should first be paid to the Laryngeal functions, and that, with the view of testing these, the patient should be asked to make some laryngeal sound, such as **a**. If no such sound can be produced, even in a whisper, the laryngeal function is obviously disabled. If the patient can produce a vocal sound at command, the function is probably intact. Secondly, in testing the Oral mechanism, the physician should ask the patient to try the pronunciation of the voiceless consonants of the first column of our alphabet, viz., those which are represented by the initials of the sentences, "Far shores seem thinly hazy," and "Two poor comrades." In the normal condition, the vocal cords take no part in producing these voiceless consonants; so that when mutism is due to the larynx alone, the patient ought still to be able to produce these voiceless consonants. On the other hand, if the oral articulative mechanism be disabled, it will be impossible for him to produce even these. Of course the production of voiceless consonants alone would not enable him to speak. There may be other obvious signs of disablement in the oral mechanism, such as slowness in the movements of the tongue; and, among Natier's cases, some are mentioned in which the patients complained of a feeling of weight or heaviness in the tongue. When the patient requires to be taught the positions of the lips, tongue, etc., in the pronunciation of the various consonants, the oral mechanism is obviously at fault.

Other Forms of Paralysis affecting the Adductors.

Aphonia without mutism, the patient being able to speak in a whisper, results frequently enough from the operation of various conditions other than hysteria, such as Blood-poisoning, Fatigue, etc.

(A.) Among these conditions, the most important is that of Diphtheria, after which aphonia is often enough developed, as one of the nervous sequelæ. Other forms of paralysis are notoriously more common after diphtheria than paralysis of the laryngeal adductors, but the laryngeal paralysis is not unfrequently met with. It may present varieties, as regards the muscles involved, similar to those of hysterical paralysis; but it may be said that paralysis of the muscles supplied by the superior laryngeal nerves, and more especially paralysis of the crico-thyroid muscles, occurs in a greater proportion of the diphtheritic than of the hysterical cases. It should also be noted that, after diphtheria, although the paralysis is generally bilateral, it is more frequently unilateral than that due to hysteria. The other toxic conditions which are capable of producing aphonia from paralysis of the adductors are, more especially, chronic arsenical poisoning and chronic plumbism; and here, again, the paralysis is more frequently unilateral than that due to hysteria, although, as in the other conditions, it is in the majority of cases bilateral.

In the treatment of these toxic varieties of paralysis, the local employment of electricity is again of great value. The constitutional state must, of course, be treated with appropriate remedies.

(B.) Still more closely allied to hysterical aphonia is the loss of voice which sometimes attends upon conditions of constitutional or Nervous Depression. Such huskiness of voice, or complete aphonia, is common enough in chlorosis and other forms of anæmia, being, no doubt, in such cases due to the mal-nutrition of the nervous system. It is also, in both sexes, a common accompaniment of constitutional neurasthenia, and of the depression of health and spirits which may be produced by mental trouble. It should be kept well in mind that the voice is in close sympathy with the mind, and especially with the emotions: its sound is cheerful or sad in close correspondence with the mental state for the time being. At times of profound emotion, it may become hoarse or husky; and, if the emotion be prolonged, it may be reduced even to a whisper. The reader will probably remember the striking picture, by Mr Archibald Forbes, of General Skobeleff, as he appeared upon his emergence from that scene of carnage, the final attempt to storm the redoubts of Plevna:—"He was in a fearful state of excitement and fury, his uniform was covered with mud and filth; his sword broken, his cross of St George twisted round on his shoulders; his face black with powder and smoke; his eyes haggard and bloodshot; and *his voice quite gone. He spoke in a hoarse whisper.* I never before saw such a picture of battle as he presented. I saw him again in his tent at night; he was quite calm and collected."

(C.) Paresis of the adductors may be produced by Fatigue of the larynx, caused by public speaking or singing; but I shall reserve the consideration of this and other troubles of professional voice-users for my next paper.

Hysterical Stammering.

If the doctrines regarding the nature of stammering explained in the first paper are remembered by the reader, he will not be surprised to learn, that, in several of the recorded cases of hysterical mutism, the patient has stammered markedly in recovery from the mutism. Evidently the voice, in returning, was produced with difficulty, and therefore did not, in the first syllables of words, come up to time. The case of mutism recorded by Professor Pitres illustrates this point. The patient in that case seems to have stammered in the ordinary way when he attempted to speak, and even to have had spasmodic phenomena, from overflow of energy, in his jaw, neck, and eyelids. It was further characteristic of ordinary stammering, that when the patient sang the stammer entirely disappeared. This case of mutism resulted from a fright; and Professor Pitres draws attention to the fact that fright is often the cause of stammering as well as of mutism, especially when the patient is of hysterical constitution. The same writer also refers to a case recorded by Professor Trousseau in his *Clinique Médicale,* in which the patient repeated many times, in echo-like fashion, the last syllable of the words she uttered. He speaks of this also as an example of hysterical stammering; but perhaps it should more properly be classed under the heading of Echolalia, which I hope to consider later, in connexion with aphasia and other conditions.

Rhythmic Spasms of the Vocal and Respiratory Mechanisms, of Hysterical Origin.

These rhythmic spasms are perhaps more intimately connected with the function of respiration than with that of phonation. It may here therefore suffice to make only a brief reference to them. They form a most interesting class of the rhythmic spasms which may affect almost any part of the body in the graver varieties of hysteria. In some cases the patient barks rhythmically; in others she coughs rhythmically; in others she sneezes; in others she snorts; in others she sniffs with the nose; in others she hiccoughs; in others she yawns; and in others she screams.

These various rhythmic spasms have certain features that are common to all of them. They are frequently associated with the ordinary stigmata of hysteria, but in not a few cases they may exist by themselves, as the sole manifestations of the condition. They are all alike apt to be produced by violent emotion, hysterical seizures, nervous shocks, or physical injuries. They may last but a short time—a few hours or days. But, in other cases, they may continue for months, or even for years. Often they occur with intervals of complete cessation, and, it may be, last for some hours; the spasm being, in different cases, repeated with very different frequency—occasionally over a hundred times per minute. Sometimes, on the other hand, they continue to trouble the patient all day long, whilst she remains awake; and may even keep her awake during the night. It is a feature common to all the varieties, that the spasm entirely ceases when the patient falls asleep.

As already said, I do not intend to give any detailed account of these spasms. I may say that the reader will find them excellently described and classified in the recent work of Professor Pitres, which has already been referred to. I am tempted, however, to make the briefest possible reference to two cases of this description which have been under my own care. One of these was a case of Hysterical Barking, which was admitted to my wards in the Royal Infirmary, on the 15th January 1889. She was brought to me by my friend Dr Penman of Hawick. I remember well the first arrival of the patient. Dr Penman had previously come to my side-room, and was describing the case, when of a sudden he paused, and said, "Listen, that is the patient." We listened, and in the distance, along the corridor of the Infirmary, we heard a sound like the quick barking of a small terrier dog; and this sound gradually became louder, until, on the patient's arrival, she proved to be herself the source of it. It was a quick, high-pitched bark, repeated at the rate of about 120 times per minute, and maintained for several hours at each seizure. There was, along with it, no appearance of dyspnœa, and no disturbance of intelligence. Like the bark of a dog, the sound was destitute of the sudden valvular beginning which is characteristic of a true cough. The patient was admitted to the side-room of the female ward; but she did not sleep much during the first night after arrival, and barked so much that one of the patients in the large ward asked the night-nurse, "When will that dog stop barking?" Under anti-hysterical treatment, this patient made an almost complete recovery.

The other case that I should like to mention was one of Hysterical Sneezing. The patient was a young gentleman, aged 21, of delicate appearance, whom I saw on the 15th September 1884. The sneezing had existed for about eight months, and had troubled the patient for several hours nearly every morning. It began immediately when he awoke, at 7 o'clock, and continued without intermission until about 10 A.M. It made the patient's nose run as in severe catarrh, and always left him with a severe headache and considerably exhausted. In this case an immediate cure was effected by very simple means. The patient was got to place under his pillow a small bottle full of crystals of carbonate of ammonium, and, immediately on waking in the morning, to put this smelling-bottle to his nose, and inhale from it as much as he could conveniently bear. He also took at the same time a full dose of tincture of assafœtida. From the date of the first employment of the smelling-bottle, the sneezing practically disappeared.

Hysterical coughing and hiccough are commoner than barking or sneezing. They cannot here be described in detail. In general features, however, the whole of this group of rhythmic spasms have characters which are closely similar. It may be added that instead of a long rhythmic succession of barks or coughs, sometimes a single harsh bark or cough may trouble the patient from time to time; and it is so also with the other varieties that have been enumerated.

The treatment of these conditions is that of the hysterical state. A measure of great efficacy is sometimes the morning shower-bath. The use of electricity, also, often cuts short an attack: as in the case of hiccough, when the poles of the Faradic battery may either be applied at each side of the chest, opposite the attachments of the diaphragm, or, one pole being applied over the epigastrium, the other may be placed over the phrenic nerve where it crosses the scalenus anticus at the root of the neck. In the latter case, only comparatively weak currents should be used.

Other Nervous Spasms, not necessarily Hysterical, of the Vocal Mechanism.

(A.) A curious variety of spasm is that in which the patient from time to time involuntarily ejaculates some word or syllable (Logospasmus Choreiformis). Occasionally the words ejaculated are of a disreputable character (Caprolalia). In that case, the ejaculations are often associated with a simultaneous convulsive tic, or spasm, of the upper extremity, or of some other part of the body. Prof. Charcot discusses this subject in the first lesson of his *Leçons du Mardi* for 1888–89. He suggests that these verbal ejaculations ought to be referred to a spasmodic disturbance of the higher functions of the brain, those of ideation; and he shows that they are often associated with other indications of mental enfeeblement, such as a striking loss of decision in the performance of the ordinary business of life. He records a case of a little boy affected with caprolalia and convulsive tic, who got into trouble by involuntarily shouting his bad words to other boys; who, not understanding the nature of his case, thrashed him for his supposed impudence.

(B.) Another spasm of the vocal organs which must not be omitted, is that tonic spasm of the adductor muscles of the larynx, which closes the glottis and produces the well-known Laryngismus Stridulus of infants, with its agony of dyspnœa. The causation and treatment of this serious condition cannot here be considered. The reader may, however, be reminded that an exactly similar condition occasionally occurs in adults as a symptom of hysteria, and that sometimes tracheotomy has even been performed in such cases for the relief of the dyspnœa. I can recall one such case, seen many years ago. It occurred in the person of a young woman, and produced such alarming and prolonged dyspnœa, with laryngeal stridor, that, had the patient's hysterical antecedents not been well known, the operation of tracheotomy would probably have been performed. When the case is really a hysterical one, tracheotomy is rarely or never required. The inhalation of a little chloroform and the administration of an antispasmodic, such as assafœtida, usually effect a speedy cure.

Paralysis of the Abductor Muscles of the Larynx, viz., the Crico-Arytenoidei Postici.

This is a very rare condition, and a very dangerous one. Its causation varies in different cases: sometimes it is due to disease of the nerves or nerve-roots; but in other cases it seems to have resulted from functional disturbances, having sometimes succeeded epileptiform fits. It has no distinct relationship to hysteria, is as common in the male as in the female, and is most common at a somewhat advanced period of life. It produces stridor during inspiration, expiration being performed without noise. This inspiratory stridor is alarmingly loud when the patient sleeps. The condition is frequently the cause of death by suffocation. In the treatment of it tracheotomy is generally advisable. Sir Morell Mackenzie records a number of cases of this condition, in his work on *Diseases of the Larynx.* I have seen only one case, the patient being a man of about 60 years of age, who was brought to me many years ago by my friend the late Dr Angus Macdonald. The rough stridulous noise produced by this patient during inspiration strongly reminded me of the noisy breathing of a "roaring" horse; and on referring to one of the authorities on veterinary medicine, I found it stated that one of the possible causes of "roaring" in the horse is this paralysis of the abductor muscles of the vocal cords.

Having thus endeavoured to give a brief account of the leading paralytic and spasmodic affections produced by functional causes, I have now only to add that paralysis and spasm of the larynx may also result from organic disease of the laryngeal nerve centres or nerve trunks. I hope at a future time to take up the consideration of these organic causes of paralysis and spasm. They will naturally fall to be considered when we come to treat of the relations of organic disease of the nervous system to the

A few of the more Important Specialties

MANUFACTURED BY

ALLEN AND HANBURYS.

Bynin.—A very active and concentrated *fluid* Malt Extract. In Bottles at 1/9 each.

Bynol.—The "Perfected" Malt and Oil. *Both* ingredients are of Allen and Hanburys' own manufacture, and are in a state of the most intimate combination attainable. It is conveniently put up in wide-mouthed Jars at 2/- and 3/6 each.

Byno-Hypophosphites.—A neutral solution of the Hypophosphites of Iron, Calcium, Potassium and Manganese, and the Alkaloids of Cinchona and Nux Vomica in combination with Bynin, Liquid Malt. One ounce contains about 1/40th grain of strychnine. More agreeable to take and valuable as a tonic than the popular (sugar) syrups so largely prescribed. In Bottles at 2/6 each.

Castor Oil, Allen & Hanburys'.—*Pure Castor Oil, of full activity, absolutely free from odour and unpleasant taste.* "It possesses all the advantages claimed for it."—*Lancet.* In Bottles at 6d., 1/-, 1/9, and 3/-, and in bulk to the profession and hospitals.

Cod-Liver Oil, The "Perfected."—Manufactured at Allen and Hanburys' own factories on the coast of Norway by a special process of their own, and sold everywhere in capsuled Bottles at 1/4, 2/6, 4/9, and 9/-.

Gelatine (Soluble) Coated Pills.—A list of several hundred formulæ sent on application.

"**Hypoderms**" is the term by which Allen and Hanburys distinguish their Tabellæ for hypodermic injection (Patented). These Tabellæ dissolve almost instantly by effervescence without the aid of either heat or trituration. Full list of pocket cases, and other particulars on application.

Malted Infants' Food (Patented).—In Tins at 1/-, 2/-, 5/-, and 10/-. Obtainable anywhere.

Medicated Throat Pastilles having as their base Pâte de Jujube, and made in over 40 varieties. A list of formulæ and prices on application.

Nitrite of Amyl Capsules.—Four minims in each. A portable form, and definite dose, of this invaluable remedy for Angina Pectoris, Syncope, &c. In Boxes at 2/- each.

Syrup of Hydriodic Acid (Allen & Hanburys').—Permanent and palatable. A non-irritant and active form for the administration of Iodine. 1 fl. dr. represents 1 gr. Iodine, or 1·3 gr. Iodide of Potassium.

Saccharin.—Supplied as *Tabellæ,* in Bottles at 9d., 2/-, and 4/-, or *Soluble* (Salt) at 1/-, 2/4, and 4/6.

Tabellæ.—Full list of Allen and Hanburys' Compressed Medicines on application. All the more insoluble kinds are made to *rapidly disintegrate* on coming in contact with moisture.

ALLEN AND HANBURYS will be pleased to send, free of charge, full price lists of all their preparations, their "Notes on New Remedies," and in most cases samples of their products, to any members of the profession, resident in Great Britain, who may apply for the same. The prices given above are the retail prices only.

PLOUGH COURT, LOMBARD STREET, LONDON.
Works: BETHNAL GREEN, LONDON, E.

Liq. Podophyllin (Hockin).

Miscible bright in Aquos, Acid, or Alkaline Solutions, also with Decoctions, Ethers, Infusions, Tinctures, etc.

Each Drachm equal to—
PODOPHYLLIN PUR ... $\frac{1}{4}$ grain.

◆ ◆ ◆

Liq. Podophyllin et Pepsin (Hockin).

A Soluble Preparation of Podophyllin and Pure Pepsin. Of great Digestive Power.

As an aid to Digestion, when the ordinary stimuli do not excite sufficient secretion, and the digestive ferment is insufficient. In all indigestion due to a sluggish state of the liver and Constipation of the bowels it will be found invaluable. Its action is certain, and it has not the strong, disagreeable odour so often found in preparations of Pepsin.

Each Drachm equals—

PEPSIN PORCI B.P.,	2 grs.
PODOPHYLLIN RESIN .	$\frac{1}{4}$ gr.

SOLUBLE PODOPHYLLIN.

Packed (for Dispensing) in 16 oz. 7s., 8 oz. 4s., and 4 oz. 2s. 6d. Bottles, and Winchester Quarts, 6s. 9d. per lb. Bottles free.

Postage charged as follows:—16 oz. and 8 oz. bots. 6d.; 4 oz. bots. 3d.

◆ ◆ ◆

LIQ. PODOPHYLLIN et BELLADONNA c. STRYCHNIA (HOCKIN).

Synonymous LIQ. HOCKIN.

Each Drachm equals—

PODOPHYLLIN RESIN ...	... $\frac{1}{4}$ gr.
EXT. BELLADONNA RAD. ALCH. ...	$\frac{1}{8}$ "
STRYCHNIA	... $\frac{1}{30}$ "

Acts most beneficially in torpid liver from defective nerve influence, and also upon the alimentary canal. It increases the tone and vascularity of the stomach, improves appetite, and promotes digestion, and in atonic dyspepsia and various chronic catarrhal affections of the gastric mucous membrane it acts as an excellent tonic, greatly increasing the muscular contractions of the intestinal tube, and counteracts constipation and fæcal accumulations.

Samples, Press and Medical Reports on application.

PREPARED ONLY BY

HOCKIN, WILSON, & CO.,

WHOLESALE DRUGGISTS & MANUFACTURING CHEMISTS,

13 to 16 New Inn Yard, 186a Tottenham Court Road, London, W.

function of speech. Meantime it may be remarked,—(1), that functional paralysis and spasm have a much more favourable prognosis than their organic equivalents; (2), that functional paralyses are usually bilateral, whilst the organic are in a larger number of instances unilateral (there are, as already said, exceptions to this rule—the toxic cases, especially, being occasionally unilateral); (3), that paralysis of the abductors is much rarer than paralysis of the adductors: it is comparatively rare even as a result of organic disease, and is specially rare as a result of functional causes.

III.—THE INCONSISTENCIES OF THE PRESENT OBSTETRIC NOMENCLATURE FOR POSITIONS.

By D. Berry Hart, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery, Surgeons' Hall, Edinburgh; Physician, Royal Maternity and Simpson Memorial Hospital, Edinburgh; Assistant Gynæcological Physician, Royal Infirmary, Edinburgh; President, Edinburgh Obstetrical Society.

(*Read before the Obstetrical Society of Edinburgh*, 13*th May* 1891.)

For the various positions the child may occupy at the beginning of labour we have at present a nomenclature pretty generally agreed upon. This nomenclature has grown up gradually, and has been specially discussed by the Committee whose formation was suggested by Prof. Russell Simpson at the London International Congress.

In naming the HEAD POSITIONS, the occiput is taken as the factor, and therefore L.O.A. means that "position" where the occiput is to the left and front.

In FACE-CASES, however, the chin is regarded as the guide, and thus we speak of L.M.A., *i.e.*, the face position with the chin to the left and front.

In BREECH PRESENTATIONS, again, the positions are taken from the sacrum, and thus we have L.S.A., meaning that position where the sacrum is to the left and front.

In TRANSVERSE PRESENTATIONS, finally, the nomenclature has varied much. The most common position has been variously termed, dorso-anterior, left cephalo-iliac, or left scapulo-anterior, etc.

Now, in this nomenclature there is no consistency, although there may be convenience provided one does not go to the root of the matter. To understand the present errors and the way out of them we must recur to the definition of what is termed "position."

"Position" involves two factors, *i.e.*, we must define the relation of a certain part of the child to a certain region of the mother. The latter factor is easily determined, as it is the upper strait of the bony pelvis. In this we take either the ilio-pectineal eminences or sacro-iliac joints, according as the position is anterior or posterior; or where the Solayres' obliquity is not present (the presenting part lying in the transverse) we take the iliac bone itself where the transverse diameter impinges, and use the word "iliac" instead of "ilio-pectineal." To divide the brim into quadrants, as Dr Milne Murray suggests, is met by the difficulty of the occasional absence of Solayres' obliquity—when the occiput, for instance, would occupy two quadrants.

Besides, the real difficulty in defining "position" is the fœtal factor. In the ordinary nomenclature it is "occiput" in head cases, "chin" in face cases, "sacrum" in breech cases, and "acromion" in transverse ones. Now head, chin, sacrum, and breech can have no topographical unity. They are so diverse that one is bound to try to define the fœtal factor of position in some other way.

I strongly urge a functional definition, and think the best is the one I have already given, viz., "*Position is the relation to the upper strait of the pelvis of that portion of the presenting part of the fœtus which should first rotate to the front in the movement of internal rotation.*"

This is really no new principle, as evidently in face cases the chin has been chosen as the fœtal indicator of position, and apparently because it is of importance that it should rotate to the front in internal rotation.

We can now rearrange the nomenclature as follows :—

Head and face cases retain their nomenclature. In breech we take the hip, and have, therefore—

Dorso-anterior, . .	Left coxa-cotyloid.
" " . .	Right " "
Dorso-posterior, . .	Left " "
" " . .	Right " "

For transverse cases we have—

Dorso-anterior, . .	Left acromio-iliac.
" " . .	Right " "
Dorso-posterior, . .	Left " "
" " . .	Right " "

It must be noted that "right" and "left" "anterior" and "posterior" refer only to the mother.

This nomenclature is accurate, logical, simple, and it tells the student, moreover, a great fact about internal rotation. The old nomenclature was inaccurate, had no logical consistence, and should of course be altered.

I am not bigoted in regard to this matter. It might, for instance, be possible to define position as "the relation of the dorsal aspect of the presenting part to the upper strait of the pelvis." This would, however, involve the alteration of the nomenclature in face-cases to "left-fronto anterior," etc., and would be an unfortunate necessity, but much better than adhering to a nomenclature that is contradictory and confusing.

I must apologise for bringing this subject up again, but I found that some of my friends objected to the brevity of that communication, and I have therefore expanded and explained it in some points.

IV.—LARGE EXTRA-PERITONEAL POLYCYSTIC OVARIAN TUMOUR COMPLETELY REMOVED BY ABDOMINAL SECTION WITHOUT OPENING INTO THE PERITONEAL CAVITY.

By JAMES HAIG FERGUSON, M.D. Edin., F.R.C.P.E., M.R.C.S. Eng.

(*Read before the Edinburgh Obstetrical Society, 8th July* 1891.)

THE development of a large polycystic ovarian tumour completely outside the peritoneal cavity is a condition of such rarity that no apology is necessary for the detailed record of this, my fifth consecutive successful abdominal section. The complete removal of the tumour by laparotomy, without opening into the peritoneal cavity, is, so far as I can find, quite unique. In my own experience of considerably over 300 cases of abdominal operations, which I have had an opportunity of assisting at or observing with Dr Halliday Croom and the late Dr Angus Macdonald, I have seen nothing at all resembling this condition. The frequency of the extra-peritoneal development and growth of papillomatous ovarian tumours is well recognised by all authorities. In fact, this inter-ligamentous mode of growth of these tumours is now regarded as one of their marked characteristics, developing as they do from the remains of the Wolffian body at the hilus of the ovary, and one occasionally meets with examples of them. They usually, however, remain completely inter-ligamentous.

Doran states in his book on *Tumours of the Ovary, Fallopian Tube, and Broad Ligament*, that out of 700 abdominal sections at which he had assisted, twenty-four were for the removal of sessile cysts infiltrating the broad ligament, in many of which their origin could not be ascertained. They were certainly not papillomatous. None contained glandular growths, and most were multilocular. Several he believes to have been multiple simple broad ligament cysts, and two were apparently dermoids. "Out of these twenty-four cases, a very large majority were ordinary multilocular cysts that had pushed apart the layers of the broad ligament, and often burrowed under the pelvic or even the parietal peritoneum." He further goes on to say, that "this is quite the exception in the case of such cysts, and appears to be the result of a rapid growth of the cystic elements in the parenchyma towards the hilum, but certainly peculiar dispositions of the peritoneum decidedly favour the anomaly." It is unlikely, and in fact it seems to be impossible, for a glandular cystoma to develop primarily at the hilus of the ovary, but it has still to be shown that papillomatous growths are the only pathological conditions which may take their origin in this region. Doran quotes Meredith, Coblenz, and others as having described cases where, "undoubtedly, ovarian cysts have burrowed under the parietal layer of the peritoneum, so as to lie directly under the abdominal walls, the operator finding that no peritoneum covers the tumour, and in other cases the tumours have burrowed under the peritoneum, lining the back of the pelvis and even the lumbar region, so as to lie against the great vessels." "These cases," he says, "are authenticated by the competent observers who have described them." Thornton, M'Graw, Olshausen, A. Martin, Kaltenbach, Freund, Goodell, and some others have recorded intra-ligamentary development of ovarian tumours. Thornton's case (reported by Meredith) is the only instance I have been able to find where the tumour became markedly abdominal, though M'Graw describes a case where, if an incision had been made parallel to, and just above Poupart's ligament, the tumour could easily have been removed extra-peritoneally (see Fig. 2).

The following is a record of the case, which, through the kindness of Dr Heron Watson, I had the opportunity of seeing and operating on at Chalmers' Hospital:—

Mrs C. A., æt. 49, was sent to Chalmers' Hospital by Dr Kyd Aitken of Dunbar in the end of May 1891, complaining of enlargement of the abdomen. Till ten weeks before her admission she had menstruated regularly every twenty-eight days, the period lasting for five days. She had seen nothing for the last ten weeks. She began to menstruate at 14. She has had four children, the eldest æt. 28, the youngest æt. 15. Eleven years ago she had a miscarriage, which confined her to bed for weeks, and made her seriously ill. Otherwise she has been a very healthy woman. Four years ago she noticed her abdomen began to swell, and the swelling appeared and disappeared several times for about seven months. About a year ago she noticed the swelling gradually returning, and apparently enlarging and diminishing as before. Latterly, she has sometimes passed a very small quantity of urine.

All the other systems are healthy, the bowels are regular, and the urine contained nothing abnormal. The patient is sparely made, and has the appearance of a healthy country woman who has been accustomed to a good deal of hard work. Her temperature was 99° F.

On examination, the abdomen was seen to be greatly distended, with marked bulging in the flanks while she was in the dorsal position, and considerable protrusion anteriorly as well. On palpation, no resistance could be made out at any spot, the whole abdomen was soft and fluctuating, giving one the impression of free fluid in the abdominal cavity. There seemed to be no play of the abdominal walls upon any free cyst wall during respiration. On percussion in the dorsal position, dulness extended to fully half way between the umbilicus and ensiform cartilage, while the note far back in the flanks was resonant. On asking the patient to change her position from one side to the other, the fluid gravitated to a certain extent, and caused considerable alterations in the areas of resonance and dulness. A distinct thrill could be made out on percussing from one side of the abdomen to the other, and the wave of fluid thus produced could be seen through the abdominal wall. On making the patient stand up, the belly became markedly pendulous from the gravitation of the fluid.

On vaginal examination the uterus was forwards, a little higher up than usual, slightly enlarged, and with a small subperitoneal fibroid on its anterior wall. It was quite movable, and was not deflected to either side. Nothing else could be made out.

The diagnosis seemed to lie between a flaccid parovarian or broad ligament cyst, probably adherent to the abdominal wall, and encysted peritonitic effusion with the intestines bound down posteriorly by adhesions. I was inclined to believe that it was the latter condition, as I had seen three similar cases before, presenting very much the same physical signs, and I had never seen any cystic tumour of such exceeding laxness and flaccidity. Dr Watson was disposed to think that it was a loose-walled cyst. It was determined to make an exploratory incision, and either drain the abdomen or attempt to remove the cyst, if there were one. Accordingly, on the 8th June, with the kind assistance of Dr Heron Watson, and in the presence of Drs MacGillivray, Hutchison, Kenneth Douglas, Basil Orr, Huskie, and some others, I proceeded to open the abdomen in the middle line with the usual incision. Immediately after cutting through the linea alba, I came directly on a cyst wall without cutting through any peritoneum at all. The opening in the abdominal wall was just sufficient to admit my finger; but on recognising the cystic nature of the case, I enlarged the incision to about four inches in length. It was noticed at the time that the cyst wall was not so glistening as is usually the case in ordinary ovarian tumours, though it presented the usual blue-gray colour of such growths. Its extreme flaccidity was well seen. By separating some fibrous adhesions with the finger round the incision, part of the cyst was pulled out, and a trocar and canula were inserted, from which a brownish fluid flowed freely away.

After emptying the largest cyst, another was punctured, and subsequently some smaller ones. Yet the tumour did not collapse, but remained attached all round to the parietes. The adhesions, which were fibrous and very slightly hæmorrhagic, were cautiously separated by the fingers, and gradually, and with a good deal of difficulty, all the cyst wall above the level of the incision was pulled out. The remains of the fluid contents of the tumour were then completely evacuated by incising the cyst wall and breaking down several smaller cysts with the finger. The total amount of fluid in the cyst amounted to a little over six gallons. The rest of the tumour, contained chiefly in the pelvis, was quite solid and required very careful handling, as it also was completely adherent, and was likewise somewhat friable, thus differing from the cystic portion, which was not at all friable. The adhesions of the solid part were much more vascular than those of the purely cystic part of the tumour, and a good deal of smart bleeding occurred during their separation, which, however, was easily controlled by catch forceps. After slowly and gently freeing the tumour with the fingers, aided by traction on the cyst wall and some external abdominal pressure, it was with considerable difficulty entirely removed through the small incision. There was absolutely no pedicle of any kind whatever, and beyond the vessels which had been torn through in separating the adhesions, I had nothing whatever to tie. There was no attachment either to the umbilicus or to the bladder. On examining the cavity from where the tumour had come, it was seen to have contracted to a small space about the size of the inside of a large breakfast cup, with peritoneum at its base and on its posterior wall, but no peritoneum beneath the parietes. On examining with the finger, the intestines could be felt above, lying behind a peritoneal covering, and the uterus, with two small fibroids on its posterior wall, was felt, with a loose layer of peritoneum interposing (see Figs. 2 and 3). The right Fallopian tube and ovary, the iliac arteries, and the left Fallopian tube could also be palpated through the peritoneum, but no left ovary could be made out. The cavity was deepest on the left side. It was quite evident to us all that we were completely outside the peritoneal cavity, the peritoneum being everywhere intact. There was a good deal of oozing from the left side, which I trusted to the pressure of the dressing to stop. I passed a rubber drainage-tube down to the bottom of the cavity, closed up the incision with five silk stitches, and dressed with iodoform, boracic lint, and salicylic wool, the whole being tightly fastened by a flannel bandage.

The patient has done extremely well. There has been a considerable discharge of healthy pus through the tube, as seems to be usually the case after operations on extra-peritoneal cysts, but this has gradually become less and less, till now the sinus is quite superficial. There was a little suppuration also in two of the stitch holes, which necessitated the opening up of a superficial sinus, and later a small abscess developed in the abdominal wall. The temperature never rose to any extent. There was some albumen in the urine for a few days after the operation, but this soon entirely disappeared. There were no tube casts, blood corpuscles, or pus cells in the urine. The patient is on ordinary diet, and the bowels act normally.

The tumour and some of the fluid were sent to the Royal College of Physicians' Laboratory for examination, and Dr Noël Paton, the Superintendent of the Laboratory, has kindly furnished me with the following report:—

"*Fluid from Dr Ferguson's Case.*

"Dark sherry coloured, mobile, copious flocculent deposit of jelly-like matter.

"*Microscopically.*—Deposit is a loose clot, with many red blood corpuscles.

"*Proteids.*—Total proteids, 3·75 per cent.; serum albumen, 3 per cent.; serum globulin, 0·75 per cent.

"*Tumour received from Dr Ferguson.*

"The tumour was a multilocular cystic growth, the cysts varying very greatly in size. The largest had been already freely opened. There was no pedicle. One side of the tumour was composed of friable, closely grained, spongy-like tissue, which gradually shaded off into the firm tissue composing the wall of the main cyst. This was covered with a shining-looking membrane. The cysts were filled with a serous fluid containing shreds of fibrin adhering to the walls, and evidently organizing.

"*Microscopic Characters.*—A. *Cyst Wall.*—Outer side covered with a layer of loose fibrous tissue, on the surface of which no endothelial cells can be detected. This layer is sharply defined from the rest of the tissue. Under this the wall of the cyst is made up of a mixture of white fibrous tissue and non-striped muscular fibres, interlacing to give the dense character to the wall. Many large vessels are seen cut in section.

"B. *Spongy Tissue from one Side.*—Only at one part of the section can the fibrous covering be detected, elsewhere the outer surface is rough and irregular. The tissue is composed of a very loose fibrous tissue, with many non-striped muscular fibres, and there is much mucoid degeneration of formed tissue. Bloodvessels are abundant. Several small cysts are to be seen in this section; each is lined with a well-defined layer of fibrous tissue, upon which, however, no cells can be detected, but which shows fibrin adhering to its surface."

Dr Sims Woodhead, Dr Bruce, and Dr Barrett, among others, have also kindly examined the tumour microscopically, and their opinions coincide in the main with Dr Noël Paton's report. I have been able to make out, in a few of the cysts, some more or less indefinitely shaped cells, which were evidently undergoing some process of degeneration. In none of the cysts, however, could I find any regular epithelial lining. Some parts of the sections exactly resemble, in structure and appearance, normal ovarian stroma. The minute structure corresponds very closely to that of a fibro-cellular ovarian tumour, figured and described by Alban Doran at page 101 of his book on *Tumours of the Ovary, Fallopian Tube, and Broad Ligament.* Sir Spencer Wells removed the tumour by abdominal section in the usual way. It contained 7 pints of fluid, and weighed 14½ lbs. Doran describes it in the chapter on Solid Tumours of the Ovary. I have called my specimen polycystic, as the cystic element in it predominated over the solid part. The fact of there being so many muscular fibres throughout the substance of my specimen is, I think, easily accounted for by the tumour having received an investment of unstriped muscle cells from those normally found at the hilus of the ovary. On looking at the tumour one can see very plainly the shreds of fibrous tissue on the cyst wall by which it was adherent to its surroundings.

Lawson Tait, in his most interesting paper on extra-peritoneal cysts in the *British Gynecological Journal* (vol. ii., 1887), makes the statement, that it is absolutely impossible for ovarian tumours ever to become extra-peritoneal, and he thinks that all extra-peritoneal cysts are developed from the unobliterated urachus. Cysts of this nature often communicate with the bladder, are liable to have an umbilical attachment, are prone to suppuration, and are usually small, though the largest one Tait operated on contained 30 pints of fluid. In his series of twelve cases the cysts were all unilocular, with no solid parts in connexion with them. Tait was only able to remove the cysts in two of the cases, death being the result in each case; the others he opened and drained through the vagina and abdomen, and they all recovered. The cyst wall in some of his cases contained unstriped muscle cells and fibrous tissue, and the interior of the cyst was lined with epithelial cells similar to those lining the bladder, only smaller. Tait describes the cyst walls of all his cases to have been of "that peculiar, gelatinous, friable material which is common to all these cases, the tissue being so easily torn that it was a matter of the greatest difficulty to remove a few square inches of it for examination." This description is plainly entirely different in every respect from the appearance of the tumour I have shown you to-night. Thornton has described one case of what he calls "peritoneal cysts," which had developed extra-peritoneally. He believes them to have arisen in the sub-endothelial cellular tissue, and that they pushed the peritoneum and its contents aside.

The only recorded case closely similar to mine which I have been able to see is one of Knowsley Thornton's, published in the *Lancet* (1880) by Meredith, in which an extra-peritoneal ovarian cyst was removed in much the same way as in my case, except that a pedicle was tied including the Fallopian tube, thus showing that the peritoneal cavity was opened into. Olshausen, in his classical work on *Diseases of the Ovaries*, says:—"In the rare cases in which the subserous tumour grows chiefly forwards, and pushes up the anterior fold of the broad ligament, it may finally be situated directly behind the abdominal walls after pushing up their peritoneal lining. It may then chance that the operator in cutting through the abdominal walls does not enter the abdominal cavity, but passes at once into the extra-peritoneal space in which the enucleation is to be performed. But the cases are extremely rare in which the operator during the entire enucleation would not be compelled to perforate the peritoneum in some part in order to operate securely." He then proceeds to quote Thornton's case (recorded by Meredith) as being the nearest approach to complete extra-peritoneal enucleation with which he is acquainted.

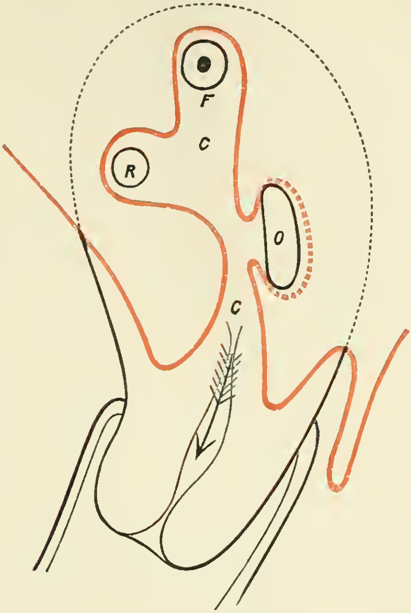


Fig. 1.—Diagram showing a Vertical Section through the Left Broad Ligament. *F*, Fallopian tube; *R*, Round ligament; *O*, Ovary; *C C*, Cavity of broad ligament. The arrow indicates the direction in which an extra-peritoneal ovarian tumour can grow. (Modified from Ranvier.)

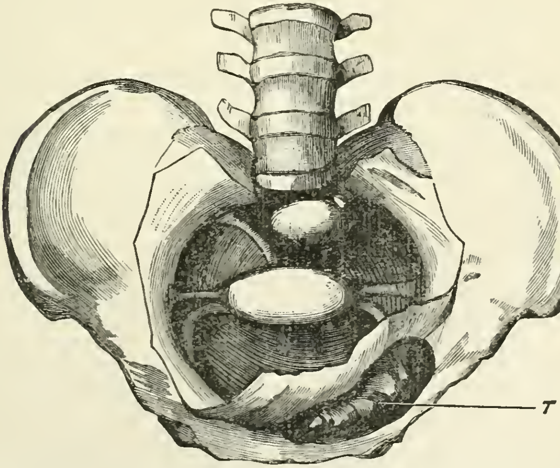


Fig. 2.—Diagrammatic representation of an Extra-peritoneal Ovarian Tumour (T) rising out of the pelvis anteriorly, reflecting a layer of peritoneum back over the bladder and uterus, and stripping the peritoneum off the abdominal parietes.

Through the courtesy of Mr Symington I have been able to investigate some of the relations of the pelvic peritoneum, and we have both found that it is quite easy to separate the peritoneum from its loose attachment to the antero-lateral wall of the pelvis, and pass one's finger between the two layers of the broad ligament and touch the hilus of the ovary. Now, if a cystic tumour were to push its way between the folds of the broad ligament it may do one of two things,—either partially to separate the serous layers, which would then expand over the tumour as it grew;[1] or, passing entirely through between the layers of the broad ligament, may grow in any direction in the sub-peritoneal connective tissue. An excellent description of this will be found, by Howell, in Mann's *American System of Gynecology*, vol. ii. p. 1001.

The cystic part of the tumour in such cases acts as a fluid wedge very much as the amniotic sac in labour, splits up the layers of the broad ligament, and then pushes on in the direction of least resistance. In those cases where the cyst grows forwards and upwards the resistance must be least in that direction, possibly from some abnormality in the disposition of the peritoneum. Such a course, however, as is well known, is by no means uncommonly followed by the burrowing of pus from the cavity of the broad ligament to a spot somewhere in the course of Poupart's ligament, or a little below it. After the cystic growth once reached the pelvic brim it could easily spread underneath the abdominal muscles, separating the peritoneum from the abdominal wall as it expanded, and reflecting a layer of peritoneum over the fundus uteri and bladder owing to the firmer attachment of the peritoneum to these organs, which would prevent it being peeled off them. In my case the solid portion of the tumour was down in the pelvis on the left side, whereas the cystic part was abdominal, thus quite coinciding with the opinion formed as to its mode of origin. In the report on the tumour it is noted that part of it appeared to be ragged and devoid of a glistening capsule. Now it was this ragged part which was enucleated from between the layers of the broad ligament, and which I believe to be the chief part of the diseased left ovary which I scraped away, leaving little behind but the layer of germ epithelium which intervened between my fingers and the peritoneal cavity.

---

[1] A few days ago, and since reading this paper, I assisted Dr Croom at an ovariotomy where the diagnosis beforehand was an interligamentous cyst. On opening the abdomen it was found that an ordinary ovarian cystoma had developed extra-peritoneally within the layers of the broad ligament, pushing the broad ligament up before it into the abdominal cavity. The tumour had, however, burst through the broad ligament in several places, and had thus become partly intra-peritoneal. The broad ligament surrounded and enveloped its base, and bore much the same relation to the tumour as an eggcup does to its contained egg. The gradual process of thinning and destruction of portions of the broad ligament by the hernial protrusions of the most actively growing cysts was well seen, and the growth of the latter appeared to have become all the more exuberant after their escape from the pressure of the broad ligament.

The points of interest in this case are:—(1.) The extreme rarity of the complete extra-peritoneal development of an ovarian tumour in this position; (2.) The impossibility of arriving at an accurate diagnosis before operation; (3.) The unusual laxness of such a cyst, due to its extra-peritoneal position; and (4.) The complete removal of the tumour without opening into the peritoneal cavity, which has not, so far as I can find, apparently been done before.

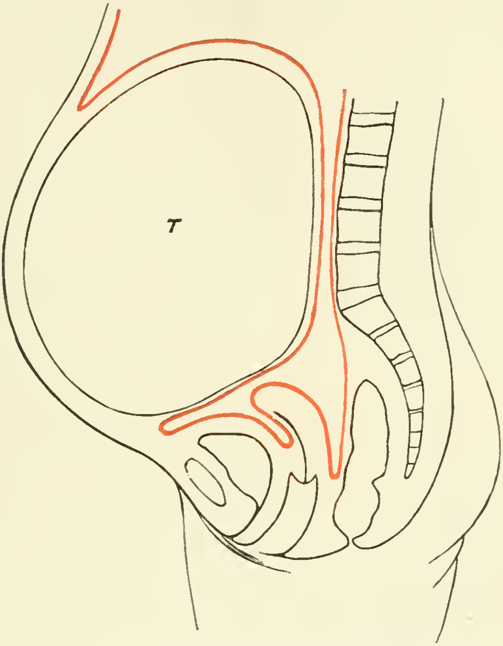


FIG. 3.—Diagrammatic representation to show the relation of the Peritoneum to the Extra-peritoneal Tumour (T) in vertical mesial section.

I was peculiarly fortunate in not having to deal with any very dense pelvic adhesions, or in meeting with extremely violent or uncontrollable hæmorrhage, difficulties which, from the literature of the cases, seem to be so frequently met with, and to prove to so many operators an insuperable obstacle to the completion of the operation. It is possible that the great expansion of the cyst in the abdomen had caused a certain amount of traction on the pelvic portion, and that in consequence the pelvic adhesions had become attenuated, and the blood-supply lessened.

What strikes one very forcibly is the extent to which the peritoneum is capable of being stripped from its connexions and yet not lose its vitality; also how, after the removal of the tumour, this displaced membrane falls back again into its old place, and evidently becomes attached again to the abdominal wall. I noticed that for about ten days after the operation the patient complained of a good deal of superficial tenderness on palpation over that part of the abdomen from where the peritoneum had been stripped; this, however, gradually passed off. Two weeks later a hardness was felt in the abdominal wall, evidently from an exudation between the peritoneum and the abdominal muscles. This soon gave evidence of fluctuation at one spot, and some pus was evacuated from it. It subsequently healed up completely, and all the hardness disappeared. In one of Tait's cases of extra-peritoneal cyst he is inclined to think that the cause of death was necrosis of some of the denuded peritoneum. He says that he would be inclined in future cases to cut away portions of the denuded peritoneum rather than risk their sloughing, and bring the edges together by means of a careful arrangement of sutures.

As Alban Doran has well said with regard to the extra-peritoneal development of glandular tumours, cases such as the above seem to be a protest against dogmatic pathology; but I may add that the very rarity of such conditions is the strongest evidence we can have in favour of the general correctness of our present clinical and pathological knowledge as to the ordinary manner of growth and development of ovarian tumours.

REFERENCES TO CURRENT LITERATURE.

1. MEREDITH.—"Extra-peritoneal Ovariotomy," *Lancet*, ii., 1880, p. 297.
2. KNOWSLEY THORNTON.—"Peritoneal Cysts," *Transactions Patholog. Soc.*, 1878, vol. xxix. p. 145.
3. SCOTT.—"Ovarian Tumour situated Outside the Peritoneal Cavity; Operation; Recovery," *West. Lancet, San Fran.*, 1880-81, ix., pp. 337–345.
4. M'GRAW.—"The Diagnosis and Treatment of Sub-peritoneal Cysts of the Ovary," *American Journal of Obstetrics*, 1883, vol. xvi. pp. 1031-1040.
5. VAUTRIN.—*Etude sur les Kystes de l'ovaire inter-ligamentaires. Nancy*, 1885 (Thesis).
6. FREER.—*Annals of Surgery*, Art. on "Extra-peritoneal Cysts."
7. LAWSON TAIT.—"Extra-peritoneal Cysts," *British Gynecol. Journal*, vol. ii., 1887, p. 328.
8. LAWSON TAIT.—*Diseases of Women and Abdominal Surgery*, vol. i.
9. BLAND SUTTON.—"Extra-peritoneal Cysts," *Lancet*, 1887, vol. i. p. 256.
10. ALBAN DORAN.—*Tumours of the Ovary, Fallopian Tube, and Broad Ligament*, pp. 68, 73, etc.
11. MANN.—*American System of Gynecology*, Art. by Howell on the "Pathology of Ovarian Tumours," vol. ii. p. 950; also, Art. by Mann on "Extra-peritoneal Cysts," vol. ii. p. 1085.

12. Olshausen.—"Die Krankheiten der Ovarien," Billroth's *Handbuch*, Stuttgart.
13. Freund.—"On Inter-ligamentous Growth of Ovarian Tumours," *Berlin. Klin. Wochenschr.*, 1878, No. 28.
14. Coblenz.—"English Abstract of Monograph on Ovarian Pathology," by Doran, *Lond. Med. Record*, vol. x. p. 81.
15. Coblenz.—"Das Ovarialpapillom," Virchow's *Arch.*, Band 82.
16. M'Murtry.—"A Case of Intra-ligamentous Ovarian Cyst," *Jour. Amer. Med. Assoc.*, Chicago, 1887, vol. viii. p. 341.
17. Goodell.—"Intra-ligamentary Ovarian Cysts," *Amer. Journal of Obstetrics*, 1888, vol. xxi. p. 1.
18. Goodell.—Also in Mann's *American System of Gynecology*, vol. ii. p. 828.
19. Gerster.—"Parovarian Cyst developing Extra-peritoneally," *New York Med. Journal*, 1887, vol. xlv. p. 556.
20. Baer.—"Enucleation of Intra-ligamentous Cyst," *New York Med. Journal*, 1888, p. 216.
21. Terrillon.—"Kystes de l'ovaire inclus dans le ligament large," *Ann. de Gynecol.*, Paris, 1888, pp. 132-136.
22. Weinlechner.—"Records of Two Cases of Extra-peritoneal Cystomata" (titles too long to quote), *Aerztl. Ber. d. K. K. Allg. Krankenh. zu Wien* (1882), 1883, pp. 244-246.
23. Goodell.—"Double Intra-ligamentous Cysts," *Journ. Amer. Med. Assoc.*, Chicago, 1889, vol. xii. p. 25.
24. Goodell.—"Recurrent Intra-ligamentary Cyst," *Amer. Journ. of Obstetrics*, New York, 1889, vol. xxii. p. 422.
25. Jastreboff.—"Colpoparovariocystomia (as Operative Method in Intra-ligamentary Cysts)," *J. akush. i jeusk. boliez.*, St Petersburg, 1888, vol. ii. pp. 491-501.
26. Billroth.—"Cystoma ligamenti lati sin.," Eder (A.) *Aerztl.*, Ber. (1888), Wien 1889, p. 117. (Several similar cases are recorded by different authors in this volume.)
27. Heurtaux.—"Kyste sous-péritonéal probablement d'origine ovarique," *Gaz. d. Hôp.*, Paris, 1889, vol. lxii. p. 858.
28. Smith.—"On Tumour of the Broad Ligament," *Brit. Gynecol. Journal*, 1889-90, vol. v. p. 280.
29. Skene.—"Intra-ligamentous Ovarian Cystomata," *Med. Rec.*, New York, 1890, vol. xxxvii. p. 437.
30. Keene.—"Intra-ligamentous Ovarian Cystomata," *Canada Lancet*, Toronto, 1889-90, xxii. p. 225.
31. Noble.—"Case of Intra-ligamentary Cyst of Left Ovary," *Med. News*, Philadelphia, 1890, vol. lvii. p. 689.

Note.—Some of the above authorities will be found to give further references to other papers bearing on the same subject.

V.—CASE OF IMPERFORATE ANUS: INGUINAL COLOTOMY.

By Hamilton G. Langwill, M.B., C.M., late Resident Physician, Royal Hospital for Sick Children, Edinburgh.

A male infant, born on the evening of Sept. 26th, 1890, was admitted into Hospital at noon on 28th Sept. for imperforate anus. There has been a previous family of five children, all dead, two being still-born; the others died in infancy. None of them known to have been malformed.

State on Admission.—Plump, healthy-looking child, apparently full time. No signs of pain or uneasiness. Abdomen full, but not tense. Inter-gluteal cleft well marked up to posterior aspect of scrotum, but no depression in position of anus.

Operation.—In Dr Bell's absence the child was seen by Dr John Thomson, and at 12.30 p.m., chloroform having been administered, I made an incision in the position of the anus; and although this was carried to the depth of about $1\frac{1}{4}$ inches, nothing resembling the gut could be felt. It was then decided to perform inguinal colotomy, and Dr Thomson kindly assisted me. An oblique incision was made in the left iliac region, half an inch above Poupart's ligament, commencing at the level of the anterior superior spine, and passing downwards and inwards for about an inch. On opening the peritoneal cavity about ʒvj. of a clear yellow odourless fluid escaped. A portion of the sigmoid flexure of the colon presented at the opening, and was readily recognised by the longitudinal bands of muscular fibres upon it. It was much distended, and of a dark green colour. The gut was then secured to the edges of the abdominal wound by eight silk sutures, which were passed through the entire thickness of the intestinal wall, and it was then opened by a longitudinal incision $\frac{5}{8}$ inch in length. A very large amount of meconium escaped. A number of horse-hair sutures were then inserted between the silk ones, and the wound was then dressed with absorbent wool. The child seemed to stand the operation well. Evening temp. 100°·2. A little milk and barley water given.

Sept. 29.—Seems very well. Temp. normal. Does not cry much. Given a mixture of milk, cream, lime-water, water and sugar (Meig's) ℥ij. every three hours.

Oct. 1.—A slight red blush around wound. Temp. normal.

Oct. 2.—Well. Temp. normal.

Oct. 3.—Temp. rose this morning to 100°, and in the evening was 103°. Abdominal wound red and angry-looking. Perineal wound suppurating slightly. Motions rather undigested. Peptonized milk given.

Oct. 4.—Evening temp. 104°. No abdominal distension or tenderness.

Oct. 5.—When the wound was dressed it was found that a number of the stitches had given way, and that more than two feet of the gut had become prolapsed. Part of the prolapsed bowel was covered with sticky lymph, and there was great flatulent distension of all of it. It was found impossible, even under chloroform, to return more than half of the prolapsed portion. The child was then kept under the influence of opium till its death on the following morning.

Post-mortem Examination.—Stomach enormously distended, reaching to the fundus of the bladder and the right iliac crest. The opening into the bowel was found to be situated five inches above its termination, which was immediately behind the neck of the bladder. Section of the gut showed it to end quite blindly.

VI.—ON THE FUNCTION OF THE TONSILS.

By G. Lovell Gulland, M.D., F.R.C.P. Ed.

(*Read before the Medico-Chirurgical Society of Edinburgh, 8th July* 1891.)

Before considering the function of the tonsils, it may be well briefly to recapitulate their structure, as in some of the more recent papers on this subject erroneous statements have been made.

The essentials to a tonsil are—a fold, ingrowth, or invagination of epithelium whose lumen is still continuous with that of the alimentary canal, and, surrounding this epithelial pit, a mass of adenoid tissue, whose presence may or may not cause a projection on the free surface. This tissue consists of a supporting framework of connective tissue, carrying numerous bloodvessels and lymphatics; in the meshes of this framework lie leucocytes in various stages of development. At some points the arrangement of connective tissue and bloodvessels may be so altered as to give rise to those structures which in this country are generally known as "follicles;" but which, as they have no relation to glandular follicles, it would be better to call "germ-centres," as Flemming (8)[1] has proposed to do.

In some cases the tonsil consists of a single pit or invagination of this sort,—as, for instance, in the faucial tonsils of the rabbit and cat, and in the individual parts of the lingual tonsil in man; but more usually a number of these simple tonsils lie so close together that their adenoid tissue becomes continuous, or secondary epithelial crypts surrounded by adenoid tissue spring from the primary crypt, and a compound organ is thus formed. These processes often occur simultaneously,—as for instance, in the faucial tonsil of man,—and the appearance of such a compound tonsil on section is that of a number of irregular crypts bordered by epithelium and imbedded in a diffuse adenoid infiltration, in which are germ-centres in varying number.

The epithelium of the tonsils is, of course, continuous with that of the mucous membrane around, and is therefore a stratified squamous epithelium in the palatal, lingual, and part of the pharyngeal tonsils, while over the upper and anterior part of the pharyngeal tonsil it is generally ciliated (*cf.* Suchannek, 22, Schwabach, 21, Killian, 18). The tonsillar epithelium in all these situations differs, however, very markedly from that of the rest of the mouth and pharynx, inasmuch as its continuity is broken by the emigration through it of enormous numbers of leucocytes. These are produced in the adenoid tissue beneath, wander between the individual epithelial cells, or through wide channels formed by the destruction of the epithelium by the previous passage of leucocytes, enter the lumen of the crypt, and so pass on into the cavity of the pharynx and mouth. In the latter situation the emigrated leucocytes are known as "salivary corpuscles." Stöhr (3) was the first to show that this emigration is a normal occurrence, and in a series of papers (6, 7, 11, 13, 14, 25) he has demonstrated that in the conjunctiva, nasal mucous membrane, urinary bladder, small intestine, and, in short, wherever an accumulation of leucocytes underlies epithelium, the same emigration takes place. I think it the more necessary to lay stress upon this fact in connexion with the tonsils, because the most recent writer on their structure, Hodenpyl (29), has misunderstood the process, and considers that this "rarefaction of the epithelium," as he calls it, is the result of pressure from beneath, and that it "facilitates the passage of lymphoid cells from the tonsil to the cavity of the mouth." As a matter of fact, the leucocytes actually destroy the epithelial cells, and it will be found that the destruction is most nearly complete, and the passages through the epithelium are widest just above the germ centres, where the constant attack of fresh leucocytes prevents repair of the epithelial covering.

---

[1] The numbers refer to the bibliography at the end of the article.

The connective tissue of the tonsils does not require special description. It consists of a network of fine fibres, interlacing in every direction, so as to produce the very fine meshes in which the leucocytes are detained.

The ultimate distribution of the bloodvessels was first worked out by Schmidt (1), whose Taf. XVI. shows their arrangement excellently. This is in so far unusual, that the arteries do not penetrate far into the tonsil, but soon break up into capillary vessels, often of quite unusual length. The veins are very numerous, of very large calibre, and have very thin walls,—altogether the conditions, as will at once be perceived, are specially favourable for the emigration of leucocytes. The lymphatic vessels commence in the tonsils by open radicles in the connective tissue spaces. Retterer (19) doubts this, but Schmidt (1) had previously quite definitely proved it, and had given an excellent schematic figure of the arrangement (Taf. XVI. 6), and with complete series of sections, it is quite easy to trace the connexion between connective tissue spaces and lymph vessel. The lymphatics unite into several large trunks just as they leave the tonsil; and these trunks, crammed with leucocytes, can easily be distinguished in the peritonsillar connective tissue. There are no lymphatics passing to the tonsil.

The "germ-centres" require a somewhat more detailed description, as their structure and function are not understood by most of the writers on the subject; and Hodenpyl in particular is in error in considering that no difference can be detected between the cells in the "nodules," as he calls them, and the adenoid tissue around. These structures are parts of the tonsil (and of adenoid tissue elsewhere), specially differentiated in order to further the mitotic division of leucocytes; and it was by the use of a special fixing solution and of pure nuclear stains that Flemming (8) first showed their true character. They have the appearance on section of round clear spots surrounded by a dark ring, and in the tonsil are arranged radially round the crypts. The prime cause of their formation is, I think, to be sought in the bloodvessels. Swain (12), though he has erroneous ideas about the structure of the germ-centres, points out that the capsule of the tonsil is produced by the fact that the leucocytes emigrating from the vessels cause an increase of bulk in the connective tissue at that point, and that as a consequence the connective tissue surrounding the infiltration is compressed, and thus apparently forms a capsule. The same thing occurs in the germ-centres; they have a peculiar arrangement of bloodvessels, from which their other peculiarities of structure result. Only capillaries enter the germ-centre, and these pass in, in a radially centripetal manner, curve on themselves in the centre, and pass out again to enter the venule. This disposition, of course, results in the massing of terminal capillary loops at the centre; and, therefore, while the current of blood in the afferent capillaries is radially centripetal, the pressure outside the capillaries, produced by the *vis a tergo* of exudation, will be radially centrifugal. Further, the blood-supply to any cells lying in the germ-centre will, evidently, be very abundant. The meshes of the connective tissue supporting these capillaries are very fine, and the fibres are very delicate. In the germ-centre the reticulum is disposed irregularly, but at its margin is condensed, and the fibres are so drawn out that the meshes run at right angles to the radius of the sphere of the germ-centre, and the fibres form a sort of capsule to the germ-centre, produced by centrifugal pressure, just as the capsule of peritonsillar connective tissue is formed (see Hodenpyl's fig. 2). Outside this capsule the fibres become continuous with those of the ordinary adenoid tissue; but it is to be noted that there are always many lymphatic vessels just outside the capsule ready to receive any cells which pass through it (*cf.* Schmidt, Taf. XVI. fig. 3). There are no lymphatic vessels inside the germ-centres, nor where germ-centres underlie epithelium are there any on the epithelial side of the germ-centre.

From this description it will be understood that any leucocytes which pass out of the capillaries in the germ-centre will be held for some time in the fine meshes of the connective tissue in the interior, but will always be pushed on slowly towards the periphery; when they reach the close meshes at the margin they will be detained still further, but ultimately the pressure from within will drive them through the meshes and force them either into the lymph vessels, into the diffuse adenoid infiltration surrounding the germ-centre, or through the epithelium. The pale appearance of the germ-centre on section when a nuclear stain is used is due to the fact that the leucocytes contained in it are principally large resting cells about to divide, as I have elsewhere described (27), which have a "vesicular" nucleus, to use an obsolete but expressive term. These divide rapidly, by mitosis, and the daughter-cells, which are small cells whose nucleus has a dense chromatin network, are carried much more quickly through the connective tissue meshes of the germ-centre than the large leucocytes of whose division they are the product, and when they are detained for a time by the closer meshes at the periphery, give rise to the deeply-stained ring of closely packed small cells which is seen there in sections. When these young leucocytes finally pass out of the germ-centre they develop according to the circumstances in which they are placed, either into the wandering leucocytes with lobate or polymorphous nuclei, or into the stationary leucocytes with "vesicular" nuclei and large cell-body, the largest of which are the well-known "macrophages." Leucocytes seem to develop into the former stage when food is scanty or has to be sought for, into the latter form where it is abundant and to be had for the taking. Most of the leucocytes in the tonsils outside the germ-centres are of the stationary stage in different stages of development, the largest macrophages lie generally just under the epithelium. Wandering leucocytes are rarely found in these organs except in the bloodvessels or lymphatics, or making their way through the epithelium. The reason for this superabundance of the stationary stage is probably to be found in the very free blood-supply of the tonsil. The leucocytes in the mucus covering the surface of the tonsil are almost invariably in the wandering stage, as one would expect.

The development of the tonsils I have described elsewhere (28).

These are the main facts in regard to the structure of the tonsils, and we may now pass to consider their function. We should have been spared much vain theorizing on this subject if writers on the human tonsil had examined the same organ in other animals, and I may note in this connexion that either faucial, lingual, or pharyngeal tonsils are found very widely in mammals (*cf.* Schmidt, 1, Killian, 18, Retterer, 19), that they are found also in birds (Killian), while Holl has described tonsils in the buccal cavities of the salamander (10) and frog (16), and Oppel has found them in the pharynx of Proteus anguinus (24). A study of the characteristics of the tonsil through the animal series completely negatives the idea that this structure is a functionless survival of some pre-existing organ. The tonsils of the frog, salamander, etc., are single shallow epithelial pits with a slight leucocyte infiltration round them, very like the first stages in the development of the tonsil in mammals, while as we advance through the scale to the Primates, the increase of the tonsils in number and in size, both relative and absolute, the increasing number and complexity of the crypts, the appearance of germ-centres, and the increased activity of leucocyte proliferation, all show that the tonsils have some very real and active function to perform.

Hodenpyl (*l. c.*) has discussed and disposed of the older theories of the functions of the tonsils, and I need not here examine them. The more recent theories, however, are those of Hingston Fox (15), Spicer (20), Hill (17), and of Hodenpyl himself.

Hingston Fox imagines that the buccal fluids accumulate in the crypts, pass through the mucous membrane, and are thus absorbed, while Scanes Spicer makes the extraordinary suggestion that the pharyngeal tonsil is meant to absorb the nasal and lachrymal secretions when one is lying down, while the lingual tonsil does the same when one is erect, as the uvula drips on to it in that position! The faucial tonsils are supposed to do something of the same sort, and the whole of them are expected to act as "sewage farms" for the contaminated nasal and buccal secretions. Hill also believes the tonsils to be absorbent organs, but thinks that they have to deal with the products of salivary digestion and the buccal secretions, both of which are supposed to be absorbed by the buccal and faucial mucous membrane, and to pass thence into small lymphatics which go to the tonsils. This is anatomically impossible, as there are no lymphatic vessels passing to the tonsil in this manner; these organs are peripheral lymph-glands, not intermediate ones. Baumgarten (4) also regards them as absorbents, because he found tubercular ulcers on them in tuberculosis produced by feeding. The difference between the absorption of food and that of microbes is considerable, however, and Hodenpyl, who examined the tonsils of 200 persons for tubercles, found them only in one case, where the individual had "died of very general tuberculosis." This seems to indicate that Baumgarten's results are capable of another explanation. Hodenpyl has, moreover, made a series of very careful experiments, in the course of which he applied olive oil, melted lard, lanolin, carmine, Berlin blue, emery powder, aniline colours, salts of iron, and solution of atropine to the surface of the tonsils, and in no case did absorption of any one of these take place to any appreciable extent.

There is no reason to regard the tonsils as concerned in the absorption of nutriment. The foods we use can only (for the most part) be absorbed after digestion, and the bolus of food before it passes the tonsils has been subjected to no digestion whatever. There is, it is true, an amylolytic ferment in the buccal fluid, but the food does not stay long enough in the mouth to have its starch converted into sugar, and, moreover, what is to be made of the case of carnivorous animals, whose normal food contains no starch, and which yet have large tonsils? No constituent of their food is digested in the mouth, and yet their tonsils are evidently of use to them. The contact of the food with the tonsils, moreover, is only a momentary one, as the bolus is hurried through the fauces. Fox (*l. c.*) makes the suggestion that some part of the food is pressed into the tonsillar crypts during the act of swallowing, but while in the human tonsil some of the crypts open towards the front of the mouth, and this might conceivably happen to a very limited extent, in most of the animals with simple tonsils, as in the rabbit, cat, and guinea-pig, the single crypt opens towards the posterior aspect and is protected from the entrance of food by an overhanging anterior lip. Moreover, the stream from the tonsils is in an outward direction, and the crypts are normally full of leucocytes and mucus, which are passing out into the cavity of the mouth. None of the observers I have mentioned were acquainted, apparently, with Flemming's or Stöhr's work, so that their theories could be of little value.

Still further objection to any theory which assumes that the tonsils have to do with absorption of food is to be found in the consideration, that even if the faucial tonsils were occupied in this way, we should still be unable on that hypothesis to explain the function of the pharyngeal tonsil, with which food never normally comes in contact. Now, the structure of all the tonsils is practically identical as far as essentials go, and we are therefore entitled to assume that their functions must also be the same. The outstanding fact in regard to them all is, then, that the tonsils are arrangements of bloodvessels and connective tissue for the purpose of furthering the division of leucocytes. The germ-centres where this production of new leucocytes mainly takes place are so situated that the young cells pass from them on one side into the lymphatic system, and so ultimately into the blood, by which they are distributed all over the body, and on the other side through the epithelium into the tonsillar crypts, and so into the alimentary and respiratory passages. The function of the tonsils is then to produce leucocytes. We must now inquire in what way the leucocytes can be utilized in this particular situation. Leucocytes, as I have elsewhere maintained (27), are to be regarded as unicellular organisms which have the characteristics of Protozoa,—the power of amœboid movement, the power of ingesting foreign matters by that movement, and of utilizing these particles for nutrition when they are capable of being so utilized. They have some other peculiarities which in this connexion are not of special importance. Possibly, for instance, they are concerned in the transport of nutriment from the absorbing surfaces to the tissues, as Hofmeister maintains (9); but as I have shown that the tonsils cannot be concerned in absorption, we may leave that point out of consideration here, though of course the leucocytes which pass into the lymphatics may ultimately come to be employed in that way, and the tonsils may thus indirectly be implicated in the function of nutrition.

The characteristics of leucocytes which I have enumerated above are those which specially fit them to "protect" the other cells of the organism, to act as "phagocytes," if I may be allowed to use that word without committing myself altogether to the views of Metschnikoff and his school as to the relations between leucocytes and microbes. It will be seen immediately, that if we consider the position of the various tonsils and various other facts which I shall adduce, we can hardly avoid the conclusion that the tonsils are "protective" organs. At the back of the human mouth and upper part of the pharynx there are two rings of adenoid tissue (*cf.* Bickel, 5). The lower of these is the one surrounding the fauces, and is formed of the lingual tonsil below, the palatal tonsils on either side, and above of the slight adenoid infiltration which Bickel describes as running along the lower surface of the velum palati. If the pharynx is opened from behind, and the parts adjusted in the position which they occupy in life when the mouth is shut, it will be seen that the passage between the mouth and pharynx is more or less accurately closed by adenoid tissue; the palatal tonsils fit into the glosso-epiglottidean hollows, resting upon the lingual tonsil which floors the passage, and are separated from one another only by the uvula. Now, from all these tonsillar structures leucocytes are constantly passing out into the isthmus faucium, so that it would be difficult for the microbes which normally abound in the mouth (*cf.* Miller, 23) to pass back into the pharynx without coming into contact with them. Numbers of these bacteria of the mouth are, of course, harmless, but Ruffer (26) points out that pathogenic organisms are by no means uncommon in the mouths even of healthy subjects, and while these are not likely in normal circumstances to be absorbed by the buccal mucous membrane, they may cause grave mischief if they pass the tonsils. Metschnikoff and Ruffer have both shown that the leucocytes in the mucus covering the tonsils contain many micro-organisms, and I can fully confirm this. But I think that Ruffer goes too far in saying that "the struggle between micro-organisms and the animal cell is a physiological process always going on *in* the tonsils;" it is probably more accurate to say that this process is always going on *on the surface* of the tonsils. My reason for saying this is that I have stained a large number of sections of tonsils for micro-organisms with Kühne's modification of Gram's method, and with Kühne's universal methylen-blue method, and have had great difficulty in finding a few micro-organisms in the stationary leucocytes lying just under the epithelial lining of the crypts, and that only in one of the tonsils examined, whilst it has been quite easy to demonstrate the Peyer's patches of microbes in the leucocytes from the surface of the tonsil, and in large numbers in the intestine by the same methods. Ruffer himself indeed (*l. c.*, p. 498) tacitly confesses (if I read him aright) that this is so; but I shall allude to this matter again later.

The upper ring of adenoid tissue in the human pharynx surrounds the posterior nares, the entrance to the respiratory tract, and consists of the pharyngeal tonsil, the tubal tonsils (if they are really constant in the human subject), and of the diffuse adenoid infiltration which Bickel and Stöhr (13) describe as running along the floor of the nose and the upper surface of the velum palati. Killian (*l. c.*) has already suggested that the pharyngeal tonsil protects the entrance to the respiratory tract. He points out that the stream of air passing through the nose falls directly on this structure, and he quotes experiments by Wiedersheim, who placed rabbits in an atmosphere full of soot, and found that the soot which had been inspired had lodged mainly in the naso-pharynx. He also presents the interesting suggestion that where animals with wide nostrils (*e. g.*, man and the domestic animals) live much in closed rooms where there are many corpuscular elements in the air, we might expect the pharyngeal tonsil to be large (as is indeed the case in these animals), while in cases where the nose is complicated in form so that the air is purified, or where the stream of air does not fall directly on the pharyngeal tonsil, that organ would not be formed at all, or would at best be small, as it is for instance in the horse. In this connexion I may mention that Ruffer has drawn attention to the fact, that the habits of an animal in regard to food have an influence on the structure of the palatal tonsil. He alludes specially to the number of "macrophages" (or large stationary leucocytes containing microbes) to be found there, but I would point out that the size of the tonsils is possibly influenced by that cause also. The rabbit and guinea-pig, for instance, which live on clean and carefully chosen food, have small tonsils, while the dog and pig, whose food is of a very mixed description, and which must take in great multitudes of microbes with their food, have tonsils very much larger both relatively and absolutely.

The protection afforded to the alimentary and respiratory tracts by the tonsils is not of course complete, and it must be remembered that these organs are only part of a very extended set of protective appliances. In the alimentary tract, for example, the alkaline saliva acts in the mouth as a germicide for some organisms, and assists the leucocytes furnished by the tonsils. In the stomach the gastric juice is antiseptic. Bunge has indeed gone the length of maintaining that the hydrochloric acid therein contained is almost entirely concerned in keeping bacterial fermentation in check; and the enormous numbers of leucocytes in the adenoid tissue of the stomach and intestine protect the body from the entrance of microbes or their products in those regions. In the respiratory tract the purification of the air in the upper parts of the passages is effected partly by the enclosure of foreign substances in mucus, and the removal of this by the action of the ciliated epithelium, and partly by the action of the leucocytes, which wander out not only through the epithelium of the pharyngeal tonsil, but through the nasal mucous membrane, and through the tracheal and bronchial epithelium from the masses of adenoid tissue which are scattered along the air-passages. In the alveoli, Cox, Tchistovitch, and others have shown that the introduction of any irritant meets with a prompt response in the emigration of leucocytes from the capillaries of the alveolar wall. The tonsils are not, therefore, to be regarded as giving more than a fractional protection,—they are merely parts of an extensive scheme. The faucial tonsils cannot of course deal with the microbes contained in the food which is swallowed,—their action is strictly confined to those which remain in the mouth during the intervals of swallowing, and that action is assisted by the saliva.

The bearing of these physiological facts on the pathology of the tonsils will at once be evident. Stöhr, indeed, realized from the first that the destruction of the tonsillar epithelium might permit the entrance of infective materials into the tissues, and that the very means taken to ward off the attacks of micro-organisms from one part of the body might, under certain circumstances, allow pathogenic microbes or their products more quickly and more surely to enter the circulation; and almost every one who has written on the subject since has alluded to it as a matter of course. I am anxious to show that the matter is not so simple as it at first appears. For example, Ruffer appears to think that the processes of "protection" in the tonsil and in the intestine are identical, whilst it seems to me that there are very considerable differences. I have already said that relatively far more microbes are to be found in a Peyer's patch than in the tonsil, and there are probably two reasons for this. The first is that while the microbes of the mouth are numerous enough, their number is nothing like so great as that of the organisms in the intestine. The second reason is that the stream of leucocytes from the tonsils is continually passing *outwards* into the mouth, so that it would require bacteria of great strength and persistence to make their way against it into the tonsil in normal circumstances; whilst in the small intestine, though leucocytes do pass through the epithelium in considerable numbers, they do so singly as a rule, and it is comparatively rare to see any such considerable amount of epithelium removed by them there as one sees above the germ-centres in the tonsil; and, moreover, there is a constant *inward* stream of absorption from the intestinal contents, which must surely make it more easy for the microbes to pass through the epithelium than in the tonsil. Generally speaking, one may say that in the upper part of the alimentary tract the protection afforded by the secreted fluids and the emigrated leucocytes is mainly *external* to the body, properly so called, while in the intestine it is mainly *internal.*

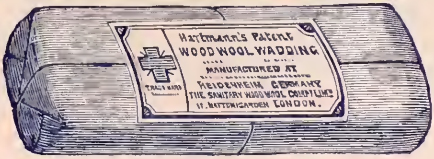
Hofmeister (9), Stöhr (25), and others have shown that the mitotic divisions of leucocytes to be observed in adenoid tissue are far more numerous in animals after meals and when they are in good health than when they are debilitated. In the tonsil, therefore, so long as the production of young leucocytes in the germ-centres goes on actively—that is, so long as the animal is in good health—microbes are not likely to gain a footing. If the outward stream so produced is interfered with in any way, however, a local infection from the organisms in the mouth may occur, and according to their nature this may or may not be followed by a general disease. An instance of this, which is familiar to every practitioner, is the frequency with which acute tonsillitis occurs in young girls at or about the menstrual period. Here the cause of the infection is probably the action upon the leucocytes through the blood of the general depression of health, and the same is probably the cause in the cases instanced by Ruffer (*l. c.*, p. 501) of the hospital sore throat which attacks overworked individuals, and of the general diseases which he cites as following tonsillar infection. But it is possible that the production of leucocytes may be as active as ever, and yet that the outward stream may be arrested. Stöhr (7) has shown that in pyopneumo-thorax and allied conditions of suppuration, where there is a large drain of leucocytes from the body, the emigration of leucocytes through the epithelium of the tonsils was brought entirely to a standstill, and the spaces previously formed in the epithelium remained empty. Here, if one may so phrase it, the demand for leucocytes by the lymphatic vessels on the distal side of the germ-centres was greater than usual, and instead of being forwarded through the epithelium, the young cells had to be passed to the other side of the germ-centre to meet the demand. Of course, this would give an excellent opportunity to the buccal microbes to enter the empty spaces, to pass through the intermediate tissue, and to take advantage of the inward stream to give rise to a general infection by the lymphatics.

There are numerous other points of interest to which I cannot now do more than allude. For example, why is it that the tonsils of young people are relatively so much larger than those of adults? May it not be that their greater liability to infective processes may have to do with it? May not the hypertrophy of the tonsils, so common in weakly children, have reference to their still greater need of protection? And I would suggest, as a question for consideration, whether the deformities of the chest and so on, which are supposed to be due to an obstruction to respiration caused by the enlarged tonsils, may not possibly be caused rather by the

HARTMANN'S PATENT WOOD WOOL PREPARATIONS.

THE UNIVERSAL HOSPITAL DRESSING.

PER 1/9 LB.



PER 1/9 LB.

HARTMANN'S

PATENT WOOD WOOL WADDING

Absolutely the Most Absorbent Dressing Made.

Invaluable for Suppurating Wounds. Will Absorb Discharges of every description.

Owing to the great Absorbing Power of Hartmann's Patent Wood Wool Wadding, it requires far less changing than absorbent cotton wool or other dressings; the Patient can therefore rest undisturbed for several days.

THIS SHOWS ITS VALUE.

In 1888 we turned out at our Factory 60,000 *lb. pkts.*
In 1889 ,, ,, ,, 85,000 *,,*
In 1890 ,, at the rate of 125,000 *,,*

THE RAPIDLY INCREASING DEMAND FOR THIS DRESSING SHOWS HOW MUCH IT IS APPRECIATED BY SURGEONS.

ANY HOUSE SURGEON that by chance has not yet given this dressing a trial should write for a Pound Packet Gratis and post-free.

ADOPTED IN ALL THE LEADING HOSPITALS,

A few of which we give on the other side.

SPECIAL QUOTATIONS TO HOSPITALS,

Reduced Prices to the Medical Profession.

Samples Free on Application.

The Sanitary Wood Wool Company, Ltd.,

11, HATTON GARDEN, LONDON.

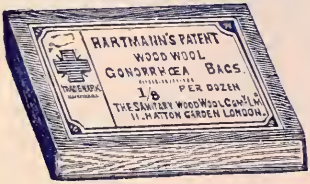
HARTMANN'S PATENT WOOD WOOL PREPARATIONS.

A NEW GONORRHŒA BAG.

HARTMANN'S

PATENT WOOD WOOL GONORRHŒA BAGS,

(Antiseptic.)



Per doz. 1/8

The most comfortable, clean and healthy appliance ever made for this complaint. No Patient should be without them. They absorb all discharge, avoid soiling clothes, and the cheap price brings them within the reach of everyone.

Opinion of the LONDON MALE LOCK HOSPITAL, taken from the "British Medical Journal," July 5th, 1890.

ROBERT J. CARTER, M.B. LOND., M.R.C.S., House Surgeon, Male Lock Hospital, writes:—

"This bag has been introduced by the Sanitary Wood Wool Company for use during an attack of Gonorrhœa. It consists of a muslin bag, the lower half of which is lined with Wood Wool, rendered Antiseptic by corrosive sublimate, and two lateral tapes, by means of which it can be fastened to a suspensory bandage or around the waist. It has the advantage of being cool, very absorbent and very cleanly, preventing any soiling of the clothes by the discharge, and thereby diminishing the risk of infecting other mucous surfaces. After use, the bags can be burnt, and their price places them in the reach of even poor patients. These bags have been tried amongst the patients at the Lock Hospital, and have proved very satisfactory and comfortable during use."

Sample Boxes of One Dozen post free on receipt of 1/10.

HARTMANN'S

SANITARY WOOD WOOL VACCINATION PADS,

Antiseptic, Absorbent and Efficacious.

HARTMANNS
WOOD WOOL VACCINATION PADS
ANTISEPTIC, ABSORBENT AND EFFICACIOUS.
TWOPENCE EACH.
THE SANITARY WOOD WOOL Co.
11 HATTON GARDEN
LONDON

Highly recommended by the principal Public Vaccinators.

The following ADVANTAGES are claimed for this Protector—

1. It protects the arm from external violence.—2. It absorbs all discharges.—3. Most important of all, it reduces the risk of septic absorption and blood poisoning.—4. It cannot be used a second time, like ordinary "shields," which it is too often the dangerous practice to use again and again.—5.—Lastly, and not its least advantage, is its extreme cheapness.

Price 2/- per doz. Post Free to Medical Men.

HARTMANN'S SUBLIMATE 'LOTIFORMS'

(For forming a required solution of Corrosive Sublimate at a moment's notice),

1/- per Bottle, containing 6 Lotiforms.

HARTMANN'S SUBLIMATE GAUZE,

The Best in the Market,

In 5 yard packets ... per yard 3½d.

A SPECIAL PRICE LIST to the Medical Profession of ALL our Preparations may be had on application.

The Sanitary Wood Wool Company, Ltd.,

11, HATTON GARDEN, LONDON.

GEO. BARBER, Printer, 16 & 17, Cursitor Street, Chancery Lane, and 23, Furnival Street, Holborn, London.

constitutional delicacy than by the alteration in the shape of the pharynx.

Conclusions.

1. The tonsils—faucial, lingual, and pharyngeal—are organs arranged to further the reproduction of leucocytes.

2. This reproduction takes place, mainly in the germ-centres, by mitotic division of pre-existing leucocytes.

3. The young leucocytes so formed are partly carried off to the general circulation by lymphatic vessels originating in the tonsil, partly remain in the tonsil as "stationary" cells, and partly wander out into the crypts by perforating the epithelium.

4. They thence pass to the surface of the tonsils, and take up foreign bodies, especially micro-organisms, which would otherwise pass the tonsils.

5. In the human subject the lingual and faucial tonsils, and the slight diffuse leucocyte infiltration of the under surface of the velum palati, form a protective ring or zone between the mouth, which abounds in microbes, and the rest of the *alimentary* tract; while the pharyngeal and tubal tonsils, and the diffuse leucocyte infiltration of the upper surface of the palate, form a protective ring round the upper part of the *respiratory* tract.

6. There is no reason to regard the tonsils as having any absorbent function in normal circumstances; the reproduction of leucocytes is sufficiently active, as a rule, to keep up a continuous outward stream of these cells, and to prevent the entry of foreign substances into the tonsils.

7. Under certain circumstances—for instance, in general debility—the reproduction of leucocytes may be interfered with, and the outward stream of these cells from the tonsils may be arrested. This arrest or other circumstances interfering with the activity of the leucocytes may allow pathogenic organisms from the mouth, etc., to enter the tonsil by the spaces in the epithelium, and these microbes may give rise to a local or general infective process.

LITERATURE.

The papers are referred to in the text by their numbers.

1. SCHMIDT, F. TH.—"Das folliculäre Drüsengewebe der Schleimhaut der Mundhöhle bei dem Menschen und den Säugethieren," *Zeitschr. f. wiss. Zool.*, vol. xiii. p. 221, 1863.
2. STÖHR, P.—"Zur Physiologie der Tonsillen," *Biolog. Centralbl.*, vol. ii. p. 368, 1882.
3. STÖHR, P.—"Ueber die peripheren Lymphdrüsen," *Sitzungsb. der Phys. Med. Gesell. zu Würzburg*, 1883.
4. BAUMGARTEN.—"Ueber die Uebertragbarkeit der Tuberkulose durch die Nahrung," etc., *Centralbl. f. Klin. Medicin*, p. 25, 1884.

5. Bickel, G.—"Ueber die Ausdehnung und den Zusammenhang des lymphatischen Gewebes in der Rachengegend," *Virch. Arch.*, vol. xcvii. p. 340, 1884.
6. Stöhr, P.—"Ueber Mandeln und Balgdrüsen," *Virch. Arch.*, vol. xcvii. p. 211, 1884.
7. Stöhr, P.—"Ueber Tonsillen bei Pyopneumothorax," *Sitzb. der Phys. Med. Gesell. zu Würzburg*, 1884.
8. Flemming, W.—"Studien über Regeneration der Gewebe," *Arch. f. mikr. Anat.*, vol. xxiv. p. 50 and p. 355, 1885. Drews, R., "Zellvermehrung in der Tonsilla beim Erwachsenen," p. 338. Paulsen, E., "Zellvermehrung und ihre Begleitungserscheinungen in hyperplastischen Lymphdrüsen und Tonsillen," p. 345.
9. Hofmeister, F.—"Ueber Resorption und Assimilation der Nährstoffe," Part I., *Arch. f. experim. Path. u. Pharmak.*, vol. xix., 1885; Part II. vol. xx., 1886; Part III. vol. xxii., 1887.
10. Holl.—"Ueber das Epithel der Mundhöhle von Salamandra maculata," *Sitzb. der Kais. Akad. Wien. Math. Nat. Class.*, III. Abth., 1885.
11. Stöhr, P.—"Ueber den Bau der Conjunctiva palpebrarum," *Sitzb. der Phys. Med. Gesell. zu Würzburg*, p. 31, 1885.
12. Swain, H. L.—"Die Balgdrüsen am Zungengrunde und deren Hypertrophie," *Deutsch. Arch. f. Klin. Medic.*, vol. xxxix. p. 504, 1886.
13. Stöhr, P.—"Kurze histologische Mittheilungen," *Sitzb. d. Phys. Med. Gesell. zu Würzburg*, 1886.
14. Stöhr, P.—"Beiträge zur mikroskopischen Anatomie des menschlichen Körpers," *Verhandl. d. Phys. Med. Gesell. zu Würzburg*, New Series, vol. xx., 1886.
15. Fox, R. Hingston.—"The Functions of the Tonsils," *Journ. of Anat. and Physiol.*, vol. xx., 1887.
16. Holl.—"Zur Anatomie der Mundhöhle von Rana temporaria," *Sitzb. der Kais. Akad. Wien.*, Abth. III., 1887.
17. Hill, W.—"The Rôle of the various Tonsils," *Brit. Med. Journ.*, 1888, Part II., p. 615.
18. Killian, G.—"Ueber die Bursa und Tonsilla pharyngea," *Morphol. Jahrbuch.*, vol. xiv. p. 618, 1888.
19. Retterer, E.—"Origine et évolution des Amygdales chez les Mammifères," *Journ. de l'Anat. et de la Physiol.*, vol. xxiv., 1888.
20. Scanes Spicer.—"The Tonsils (Faucial, Lingual, Pharyngeal, and Discrete), their Functions and Relations to Affections of the Throat and Nose," *Lancet*, 1888, vol. ii. p. 805.
21. Schwabach.—"Zur Entwickelung der Rachentonsille," *Arch. f. mikr. Anat.*. vol. xxxii. p. 187, 1888.
22. Suchannek.—"Beiträge zur normalen und pathologischen Anatomie des Rachengewölbes," *Beitr. zur Path. Anat. u. Allg. Path.*, vol. iii. p. 33, 1888.

23. Miller, W.—"Die Mikroorganismen der Mundhöhle," Berlin, 1889.
24. Oppel.—"Beiträge zur Anatomie des Proteus Anguinus," *Arch. f. mikr. Anat.*, vol. xxxiv. p. 511, 1889.
25. Stöhr, P.—"Ueber die Lymphknötchen des Darmes," *Arch. f. mikr. Anat.*, vol. xxxiii. p. 255, 1889.
26. Ruffer, M. A.—"The Phagocytes of the Alimentary Canal," *Quart. Journ. of Micr. Sci.*, vol. xxx. p. 481, 1890.
27. Gulland, G. Lovell.—"The Nature and Varieties of Leucocytes," *Reports of the Lab. of Roy. Coll. Physic. Edin.*, vol. iii., 1891.
28. Gulland, G. Lovell.—"The Development of Adenoid Tissue," etc., *Reports of the Lab. of Roy. Coll. Physic. Edin.*, vol. iii., 1891.
29. Hodenpyl, E.—"The Anatomy and Physiology of the Faucial Tonsils, with reference to the Absorption of Infectious Material," *Internat. Jour. of the Medic. Sci.*, New Series, vol. vii., 1891.

VII.—ON THE TREATMENT OF FIBROID TUMOURS OF THE WOMB.

By Dr Engelmann, Kreuznach. Communicated by J. W. Ballantyne, M.D.

(*Read before the Obstetrical Society of Edinburgh, 10th June* 1891.)

Since the year 1868 I have had 689 cases of fibroid tumours of the womb under my care here. A retrospect of the results obtained from the treatment usually employed will not be without interest.

Of the 689 cases, only 409 are suitable for our present purpose. The remainder were either too short a time under treatment for a conclusive opinion of the result to be formed, or (in 53 cases) were only under my observation during the past year. Of the 409 cases the great majority have been carefully observed by me during several years. I have treated a smaller proportion of them for a short time, but have received such accurate details of their further progress from the medical men who have attended them that I have no hesitation in including them in the list. I have carefully and repeatedly examined all the cases, by far the greater number of which have been sent to me by eminent professional men, so that the correctness of the diagnosis hardly admits of question.

I shall now say a few words as to the mode of treatment employed.

Our mineral waters have been known and recognised for many years as among the most efficacious remedial means which can be used in cases of fibroid tumour of the womb. They may be taken internally (as in the case of the Elisabeth Spring), but are principally used in the form of baths, which are strengthened by the addition of smaller or larger quantities of Mutter laüge (mother lye). Mutter laüge is an extract of the saline waters, which is obtained during the preparation of the salt, and contains its active and essential ingredients in a very concentrated form.

By the addition of Mutter laüge in various proportions the baths can be readily adapted to every different constitution and form of disease. In cases of fibroid tumour we usually prescribe a long course of baths of considerable strength. Fewer than thirty baths are rarely taken, and usually a greater number. The temperature of the baths is generally low, so as to lessen as much as possible their enervating effect. In serious cases they are continued with considerable intervals all the year round, when, after a long course here, artificially-prepared baths are taken during the winter at home.

In addition to the baths, compresses of diluted Mutter laüge are applied. These must cover the whole lower part of the body, and remain on during the night. They cause a slight but continuous irritation of the skin. Besides these injections, hot douches, etc., are used in special cases.

The above methods of treatment are those generally adopted here.

In a great number of instances ergotin is also employed, especially where a rapid increase in the growth of the tumour and severe hæmorrhage are present. I prefer the subcutaneous injection of ergotin, as when continuously used it is apt to disagree with the stomach and to induce dyspeptic symptoms. Where the subcutaneous injection of ergotin is employed with the right preparation and in a suitable manner, its daily repetition can be continued without injurious results, and any, or but very slight, local reaction. In very many cases I have used it daily for several months without the appearance of reactionary symptoms or increased weakness in the patient. I decidedly prefer the ergotin prepared by Bombelon of Neuenahr, which in my experience produces least irritation; but there may be other equally efficacious preparations. It is of primary importance that the dilution of the preparation with water should always be made immediately before the injection. The undiluted preparation will keep for an unlimited time; but as soon as it is mixed with water decomposition begins, which advances so rapidly that in the course of a few hours, in summer, the preparation is filled with masses of microbes. These injected beneath the skin produce a most disagreeable and painful reaction, which has hitherto brought this mode of treatment rather into discredit among us. After careful experiments I have found that the usual addition of carbolic acid has little effect in preventing decomposition, as I have already proved (see *Deutsche Medicin. Wochenschrift*, No. 35, 1886).

I usually proceed as follows:—After disinfecting the Pravaz syringe, as well as the part to be operated on, with a solution of carbolic acid of the strength of 2 per cent., I put the necessary quantity of ergotin ($\frac{1}{4}$–$\frac{1}{2}$) into the syringe, which I then fill up with distilled water. By then moving it up and down the contents are easily and thoroughly mixed. I only use the finest needles for the injections. By thrusting the needle quickly through the cellular tissue of the skin no pain is, as a rule, inflicted on the patient.

I consider it important to make daily injections, so as to insure a continuous effect on either the muscles of the uterus or on the smaller vessels, as in my opinion it is only by this means that a satisfactory result can be obtained.

I frequently combine the internal and subcutaneous use of ergotin by administering it as an injection and by the mouth on alternate days. I have repeatedly tried ergotinin (Tauret's), but cannot say that I have found it efficacious. I have frequently made use of hydrastis canadensis without any result, so far as I could ascertain, as regards the tumour itself, though not without effect on the accompanying hæmorrhage. I have treated 21 cases exactly as directed by Apostoli and with his apparatus, after learning its application from himself.

It would occupy too much time to enter here upon individual cases. I must content myself with dividing them into groups, and submitting the effect of the treatment upon their various forms. I think it inexpedient to follow the usual division into *subserous*, *interparietal*, and *submucous*, but to divide the tumours into three groups according to their size. I have classed as "very large" those which extend higher than the navel; as "medium size" those as large as a child's head; and as "small" those which have not attained these proportions. Further, it is important to distinguish between those which appear near the climacteric, or after forty years of age, and those which develop sooner; and, finally, it is interesting to ascertain the way in which the symptoms exhibit themselves, and the effect of the treatment upon them.

304 cases were treated with our local remedies only. Of these 64 were tumours of very large size, 17 medium size, and 133 small. In 61 = 21 per cent. of these cases, the general condition was low; in 56 = 18 per cent., there was severe hæmorrhage; and in 51 = 16 per cent., severe pain and pressure. After treatment in 38 = 63 per cent. cases, the general condition showed decided improvement; in 11 = 18 per cent., there was complete recovery; and in 12 = 19 per cent., the general condition showed little or no improvement. The severe hæmorrhage was completely checked in 17 = 31 per cent.; decidedly improved in 29 = 50 per cent.; the irritation and pressure were cured in 22 = 43 per cent.; decidedly improved in 20 = 40 per cent.; and unchanged in 9 = 17 per cent.

The effect of the treatment on the tumour itself was as follows: In 58 = 19 per cent. cases, it was perceptibly and permanently diminished in size; in 149 = 49 per cent., it remained stationary; and in 97 = 32 per cent., no apparent effect was produced.

In addition to the baths, ergotin was used in 96 cases. These have decidedly been more serious than those in the previous category. In 21 = 22 per cent. cases, the general condition was bad; in 37 = 38 per cent., there was severe hæmorrhage; and in 23 = 24 per cent., pain and pressure.

A. *Treated with Baths alone*, 304.

	Very large, 64.		Medium size, 107.		Small, 133.		Total,
	Above 40, 56	Under 40, 8	Above 40, 63	Under 40, 44	Above 40, 63	Under 40, 70	304
Strength pretty good, or good, ...	46	5	50	35	51	56	243
Strength low, . . .	10	3	13	9	12	14	61
Hæmorrhage severe, .	11	3	11	8	10	13	56
Pressure and severe pain,	14	2	9	6	9	11	51
After Treatment.							
Low strength, little or not improved, . .	2	1	2	2	2	3	12
Decidedly improved, .	6	2	8	5	8	9	38
Completely cured, . .	2	—	3	2	2	2	11
Hæmorrhage entirely or nearly removed, . .	4	1	4	3	2	3	17
Decidedly improved, .	4	2	6	4	5	8	29
Not improved, ...	3	—	1	1	3	2	10
Pressure and pain completely or almost completely removed, . .	7	1	6	1	3	4	22
Decidedly improved, .	5	1	2	4	4	4	20
Not altered, ...	2	—	1	1	2	3	9
Tumour perceptibly diminished, or marked diminution, ...	10	2	16	8	12	10	58
Tumour stationary, or only slightly increased,	29	3	29	21	31	36	149
Tumour growth unchanged, ...	17	3	18	15	20	24	97

The effect of the treatment upon the tumour itself and its accompanying symptoms was as follows: In 13 = 64 per cent. cases, the previously low condition of the patient was improved; in 4 = 18 per cent., there was complete recovery; and only in 4 = 18 per cent., no signs of improvement were visible. The severe hæmorrhage was entirely checked in 17 = 46 per cent.; there was marked improvement in 15 = 4 per cent.; and no result in 5 = 14 per cent. The irritation and pressure were cured in 8 = 35 per cent.; improved in 12 = 53 per cent.; not improved in 3 = 12 per cent. With regard to the tumour itself, there was perceptible diminution in 22 = 23 per cent.; cessation of growth was observable in 51 = 53 per cent.; and in 23 = 24 per cent., no definite effect was observable.

Electrolysis was used in addition to the usual treatment in 21 cases. Of these, 12 date from last year, and are not included in the first list. I did not specially select these cases, but used it at the request of the patients themselves who had heard of the treatment, and wished to try it. The greater proportion of the cases was severe. The treatment, which I had studied under Apostoli himself, was carried out in every detail according to his own directions.

B. *Treated at the same time with Ergotin*, 96.

	Very large, 24.		Medium size, 47.		Small, 25.		Total,
	Above 40, 16	Under 40, 8	Above 40, 26	Under 40, 21	Above 40, 6	Under 40, 19	96
Strength pretty good, or good, ...	10	6	22	17	4	16	75
Strength low, . . .	6	2	4	4	2	3	21
Hæmorrhage severe, .	5	3	12	8	3	6	37
Pressure and severe pain,	4	3	6	5	2	3	23
After Treatment.							
Low strength, little or not improved, . .	1	1	1	1	—	—	4
Decidedly improved, .	4	1	2	3	1	2	13
Completely cured, . .	1	—	1	—	1	1	4
Hæmorrhage entirely or nearly removed, . .	2	1	6	4	1	3	17
Decidedly improved, .	2	1	5	3	2	2	15
Not improved, . .	1	1	1	1	—	1	5
Pressure and pain completely or almost completely removed, . .	2	1	1	2	—	2	8
Decidedly improved, .	2	2	4	2	1	1	12
Not altered, ...	—	—	1	1	1	—	3
Tumour perceptibly diminished, or marked diminution, . . .	4	3	7	4	1	3	22
Tumour stationary, or only slightly increased,	9	3	13	10	4	12	51
Tumour growth unchanged, . . .	3	2	6	7	1	4	23

Of the 21 cases, 7 of the tumours were very large, 9 medium size, and 5 small. The general condition was bad in 8 = 38 per cent.; there was severe hæmorrhage in 9 = 43 per cent.; pain, etc., in 6 = 29 per cent. The effect of the treatment (which in a few instances extended over a year or more) was as follows:—The general condition, previously unfavourable, was decidedly improved in 5 = 62 per cent.; complete recovery took place in 2 = 25 per cent.; the treatment had no effect in 1 = 13 per cent. Hæmorrhage was stopped in 1 = 13 per cent.; improved in 5 = 55 per cent.; not improved in 1 = 12 per cent. The pain, etc., was cured in 2 = 33 per cent.; improved in 3 = 50 per cent.; unaffected in 1 = 17 per cent.

C. *Treated at the same time with Electrolysis*, 21.

	Very large, 7.		Medium size, 9.		Small, 5.		Total,
	Above 40, 3	Under 40, 4	Above 40, 5	Under 40, 4	Above 40, 2	Under 40, 3	21
Strength pretty good, or good, ...	2	3	3	2	1	2	13
Strength low, . . .	1	1	2	2	1	1	8
Hæmorrhage severe, .	1	1	3	2	1	1	9
Pressure and severe pain,	1	1	1	2	—	1	6
After Treatment.							
Low strength, little or not improved, . .	—	—	—	1	—	—	1
Decidedly improved, .	1	1	1	—	1	1	5
Completely cured, . .	—	—	1	1	—	—	2
Hæmorrhage entirely or nearly removed, . .	—	1	1	1	—	—	3
Decidedly improved, .	1	—	1	1	1	1	5
Not improved, . . .	—	—	1	—	—	—	1
Pressure and pain completely or almost completely removed, . .	—	—	1	—	—	1	2
Decidedly improved, .	1	1	—	1	—	—	3
Not altered, ...	—	—	—	1	—	—	1
Tumour perceptibly diminished, or marked diminution, . . .	—	1	2	1	1	2	7
Tumour stationary, or only slightly increased,	2	2	2	2	—	1	9
Tumour growth unchanged, . . .	1	1	1	1	1	—	5

The effect of the treatment upon the tumour was as follows:—Perceptible diminution, 7 = 33 per cent.; cessation of growth, 9 = 43 per cent.; no improvement, 5 = 23 per cent.

The results obtained by our treatment here are, viewed as a whole, not very brilliant; but, on the other hand, in presence of an ailment so difficult to contend with, they are by no means to be despised. We are the more justified in expressing this opinion, because the greater number of our patients, from the nature of the case, have already suffered for many years from the disease. In from two-thirds to three-fourths of the cases we can report marked effect on the tumour itself; while in from a fifth to a fourth a perceptible diminution in the size of the tumour, or decided cessation or retardation of its growth, has taken place, all of which has been maintained.

I am quite aware that it is extremely difficult to arrive at a definite conclusion as to the actual condition in cases of tumour, and that we cannot definitely pronounce an opinion upon minor changes, nor frequently even upon more important ones, the more so that many tumours alter periodically in size, and that their growth appears (from time to time) to be arrested. Hence I have proceeded with the greatest caution, made very accurate notes and drawings, the examinations have been repeated at the same interval before or after menstruation, and only indisputable cases of retrogression taken into account. Many mistakes may nevertheless have been made, which, however, regarding the great number of cases, will make little difference on the result. Greater certainty exists in our conclusions as to the effect of the treatment on the general condition of the patient, and the secondary symptoms arising from the disease. There can be no doubt as to the existence or extent of these results.

With regard to the general condition, we have only 20 per cent. of failure to report, while in more than a fifth of the cases complete recovery took place. Here we must take into consideration that only very grave disturbances of the general condition are referred to. Further, that only severe cases are included, while the slighter troubles which frequently arise are not taken into account at all. If they were enumerated, the result would be a much more favourable one, as nearly without any exception minor disturbances of the general health, as well as such symptoms as slight pressure, pain, and hæmorrhage, are removed by the treatment. The severe hæmorrhage and other accompaniments of the disease present were in more than 80 per cent. of the cases either quite cured or materially improved.

I shall conclude by expressing my opinion as to the treatment of fibroid tumour of the womb, based upon what I have already stated. It has been proved that the treatment is not so thankless as is generally thought. At the same time it is essential that the patient and doctor should exercise great patience and perseverance, without which nothing will be gained. As time and money are both necessary, it is clear that the large class who toil for their daily bread can derive but little benefit from the treatment. This class will always furnish the great contingent for operations, as myomotomy and oophorectomy, while the richer classes will seldom be obliged to have recourse to such means of relief. Of the numerous, and in many instances very severe, cases which have been sent here for treatment, so far as I know in four cases only myomotomy, and in six cases castration was necessary, while in five enucleation of the descending tumour was required.

In general the treatment depends on the character, position, and size of the tumour; farther, on the secondary symptoms caused by it; and not least, on the age of the patient. If the tumour is small, increases slowly, presents few fresh symptoms, and the patient is near the climacteric, it may be left alone, and we may content ourselves with an occasional supervision of the patient's condition. If, on the other hand, the patient is young, and the growth, although not rapid, still clearly perceptible, even should the general health exhibit no bad symptoms, it will be our duty to interpose without waiting until the tumour has assumed larger dimensions. Treatment is absolutely essential when the case presents a tumour of large size, or if small shows a disposition to increase rapidly, and is accompanied by bad symptoms. It is then equally necessary, even if the patient is no longer young and the change of life apparently near. It is well known that in cases of fibroid tumour of the womb menstruation continues long after the usual time. I have treated a number of patients with whom the period regularly recurred until their 55th and 56th year.

In simple forms of the disease it is sufficient to make use of general hygienic treatment, proper regulation of the bowels, avoidance of any violent exertion, raising of weights, riding, continuous standing, and tight clothing. Care should be exercised during the period: if the menses are copious, entire rest is advisable. At the same time the internal use of ergotin may be tried in doses of 0·25–0·50 grains daily for a considerable time, with occasional interruptions, should no disturbance of the digestion occur.

If severe hæmorrhage is present, greater care is, of course, required, and rest during the period is recommended; but different cases require special treatment, for there are patients who lose more blood when in bed, and who feel better of gentle exercise in their room, alternating with rest on the sofa. In such cases I have obtained good results from the use of hydrastis canadensis. I prescribe this three or four days before the commencement of the menses, and continue it during the first two days of the period. A warning is necessary against the use of ergotin when hæmorrhage has once set in. I have often observed that it increases the hæmorrhage, and if administered in large doses it frequently causes cramps resembling tetanus in the muscles of the uterus, occasioning intense pain.

In severe cases more energetic measures are required. I recommend the systematic and persevering use of ergotin injections, either alone or in conjunction with its internal use, somewhat as follows: 0·25 gramme of ergotin may be administered by subcutaneous injections, and internally on alternate days. If it can be done without causing severe pain, the injections may be continued during the menses.

And here our baths come into play, especially where complications, pressure, or irritation supervene. They must be strong and long continued, and in cases where the patient is not in a position to make use of them on the spot, may be taken in the form of artificial baths at home, as the necessary Mutter laüge is easily procurable. In addition to the baths, I advise the use of compresses of Mutter laüge; and in cases of irritation of the peritoneum, hot douches, which are decidedly of more value here than in cases of hæmorrhage, which they generally fail to relieve.

The same treatment is recommended in very severe cases, and it is often surprising to observe the rapid recovery of patients,—the disappearance of bad symptoms, and an improvement in health which enables operations, before considered imperative, to be dispensed with. It is a fact, that in four severe cases which I treated here, and in which distinguished medical authorities had advised an operation as the only means of cure, it was afterwards dispensed with as unnecessary. But even where this result is not gained, there is no doubt that when an operation is unavoidable, the chances in the patient's favour are greatly increased by the improvement produced in the general condition from the use of the baths.

Part Second.

REVIEWS.

Second Report on Lunacy Administration (Ireland), made by Sir Arthur Mitchell, K.C.B., R. W. A. Holmes, Esq., C.B., and Dr F. X. F. Maccabe, to the Lord Lieutenant of Ireland, 28th May 1891.

THIS Report differs in character from any similar document that has ever before been drawn up in regard to lunacy. It is not an ordinary "Lunacy Blue Book," nor is it on the lines of any of the reports of the Royal or Parliamentary Commissions. It is something more than these. Ireland was admittedly behindhand in some of its laws and in much of its administration in regard to the care and treatment of the insane. Not that it did not possess asylums and hospitals, and many of these very good ones; nor that it had no central administration or supervision of the insane and their institutions. It is not in the deplorable state that Scotland was in before the Act of 1857. There were no very crying abuses and scandals like those discovered by Miss Dix in Scotland in 1855, and elaborately exposed in detail by the Royal Commission of 1856. England had in 1845 been led to pass its great Lunacy Act entirely by the persuasions of Lord Shaftesbury on purely philanthropic motives. Scotland, in 1857, was led to pass her Act by the shame and contrition of a neglected duty, first pointed out to her by an alien peripatetic philanthropist. Miss Dix, after energetically showing many of the American legislatures their duty in regard to the insane, was on a tour in Scotland for her health, and came on some of our Scotch lunacy abuses. She rushed up to London, and by sheer force of feminine energy that would take no denial and no evasion and no postponement of inquiry from

Sheriff, Lord Advocate, or Home Secretary, she aroused such a force of opinion that the Royal Commission had to be appointed.

In Ireland things have taken a different course. It has passed twenty-seven Acts in regard to mental disease and its victims. It had built county asylums, appointed inspectors in lunacy, and had published its annual Lunacy Blue Books like England and Scotland. Yet its administration was so manifestly needing improvement, that a small Commission of a special kind was appointed by the Lord Lieutenant to report to him on certain specified points. Three highly skilled and most experienced officials were selected for this purpose. Sir Arthur Mitchell had already in Ireland reported on the subject of criminal lunacy, and had shown his great capacity, his wide views, and his unrivalled knowledge of the whole subject. It is no discourtesy to the other members of the Commission to say that his hand is evident in every page of the Report. His views are, we may say, everywhere dominant, and his special experience appears throughout the intricate details of administration that are elaborated. Dr Maccabe, of the Irish Local Government Board, brought a thorough and long acquaintance with Irish poor-law administration, along with a previous acquaintance with the working of Irish asylums. Every one who is acquainted with him or his official work knows his great ability and grasp. Mr Holmes supplied the legal and financial knowledge and ability necessary for the construction of a new Act. A better team to do such a work could not have been selected. Would that all our Acts of Parliament, and all our advances in administration of public affairs, were founded on such knowledge and such experience.

What the Commission has done is this,—It has gone fully into the whole question on the spot. It has drawn up an exhaustive Report that should be absolutely convincing to the Irish governing powers and to Parliament. It has, with full knowledge of their working, brought before the Lord Lieutenant the principles that underlie the English and the Scotch Acts, showing what they do and what they do not attempt to do, and has gone into detail in regard to how they have worked. It has drawn up the basis of an Act for Ireland, not in detail and clause by clause, but in such a way that it can be done by any capable parliamentary draughtsman. Ireland has thus got the benefit of England's fifty-six years' experience in taking care of the insane, and of Scotland's thirty-four years' experience, with a careful adaptation of these experiences to her own existing laws, conditions, and administrations. They say, "The existing Irish lunacy laws are in various respects behind those of England and Scotland," and "they are not the outcome of, and do not represent the opinions which now prevail as to the care and treatment of lunatics, and which have given shape to the English and Scotch statutes." The great merit of the Report is the way in which the "principles" of the English and Scotch—but especially the Scotch—lunacy law and administration are brought out. It is in this respect that it is unique and most interesting, apart from its actual value as a basis of future Irish legislation. The Scotch Act is most carefully analysed, showing in what respects, where, and how it has compulsory powers, and how these have worked; where it has reporting powers, and how these have worked; and where its power has been merely advisory and educative of opinion, and how this has worked, or failed to work, for the good of the insane. The principles of the Scotch law and of the Scotch procedure had already avowedly been adopted in many respects in the English Lunacy Amendment Act of 1890, so that it is no wonder that these principles are also largely recommended for Ireland. To the medical profession this is specially satisfactory, for the Scotch Act and its mode of administration are far more medical than even the new English Act and its mode of administration. The visiting paid Commissioners are in Scotland all medical men. In England the Commission is half lawyers, half doctors. In Scotland six months' preliminary treatment out of the asylum for cure before certification is allowed to the relatives and family doctor. No such thing is allowed in England. In the Report the Scotch practice on both these points is recommended, only twelve months is recommended as the permissible time before certification, which is quite right. At present there are 66 per cent. of the Irish insane admitted to asylums on orders as "dangerous lunatics," while in Scotland 0·4 per cent. are so admitted. Such a preposterous and entirely unmedical practice must, of course, be got rid of. The Report recommends that the doctor should be the "supreme head" of every asylum. The almost universal present Irish practice of having visiting physicians to asylums, so dividing the authority and lessening the responsibility of the medical superintendent, is recommended to be gradually abolished. "A superintendent should be allowed, when he is in difficulty, to obtain the advice which is likely to be useful to his patient in view of the nature of the malady in connexion with which the difficulty arises. He may be safely left to do this judiciously." Everywhere we find such sensible medical indications recommended. It is very interesting to any one acquainted with the English and Scotch laws and their practical working to find in this Report the sort of implied criticism of them in lesser details which experienced members of the Lunacy Commission must feel inclined to make, and know well where to make, but from their official position cannot make. The result of the Report should be that a first-rate Irish Act should be on the Statute-book in a year or two.

In regard to certain minor matters, it is possible to criticise the recommendations of the Report. It is a most invidious and tremendous power, which few boards would care to have, that "it may safely be left to the General Board to determine what private asylums should continue to exist or be brought into existence." This implies direct responsibility for these institutions. Either admit private asylums into the full swim of the struggle for existence, or kill them outright. We highly approve of "provincial" asylums for chronic and easily managed patients, but we don't think "succursal" is the word to denote them. We never met with any one who understood or liked the word. And when the provincial chronic asylums are established, better and more specific provision should be made for selecting patients from the district asylums to go into them. The General Board could not select them. This must be left to each district asylum doctor—under some pressure sometimes, we admit; but he alone can do it, for he alone knows the mental states and habits of the patients. The fad of the Scotch and English lawyers to compel the doctor solemnly to go through the names of his cases once a year, and certify those that he thinks ought still to be detained, is recommended. If he does not so certify, they must be discharged. This is a ridiculous and roundabout provision that he shall do his plain duty, and send those out of the asylum that are recovered, or safe, or can be or better elsewhere as well taken care of. In all the years of its existence, we never heard of a patient being so discharged under this clause in Scotland, and we lately heard that all the patients in an English county asylum had either to be discharged or detained illegally through the doctor's forgetting to give the proper certificate at the proper time. This provision, lawyers to the contrary, is not the proper way to do what is intended and what should be done. We believe every Commissioner in Lunacy should have the power to discharge a patient, this being contrary to the opinion of the Report. This, if it did nothing else, would make Commissioners feel more directly the responsibility of the "liberty" and "getting home" question as a daily source of irritation in asylums. We have often thought that if we were a Commissioner, and had the power, we should be greatly tempted logically to apply the legal principles laid down, let us say, in the late Lord Cockburn's decision about "dangerousness" only constituting a true legal reason for deprivation of liberty *quoad* insanity; or the principles of civil capacity acted on in the Wyndham or Cathcart cases to all the patients in asylums to whom they were applicable, and restore them all forthwith and instanter to personal liberty and civil life. At present there are naturally two laws and practices: one for the many, who have not the knack of fighting or the money to retain good fighting counsel, and the other for those who have. The discharge of a hundred rich delusional cases and mild dements would do more to stop future trouble than anything else.

There is an extremely interesting statistical inquiry into the increase of Irish lunacy, and especially of Irish lunacy expenditure, in the face of a greatly diminishing Irish population; and a comparison with English and Scotch experience on these points. The general conclusion is that the insane poor are more numerous in relation to the population in Ireland than in Great Britain. The Report concludes with a strong opinion and demonstration, with which all who have experience will agree, that it is a false statement that "human power cannot multiply the lunatics of a country." There is no fixed standard of lunacy, in fact, as yet, for the doctor, the commissioner, or the layman.

Prichard and Symonds in Especial Relation to Mental Science; with Chapters on Moral Insanity. By D. HACK TUKE, M.D., LL.D. London: J. & A. Churchill: 1891.

AT the meeting of the Medico-Psychological Association at Bristol in the spring, Dr Hack Tuke read a paper on the lives of two worthies whose names are connected with that city. The first of them, Dr Prichard, was the author of the *Physical History of Man*, and of a *Treatise on Insanity*, which was thought the best in its day in the English language. Though Dr Symonds was scarcely so well known, he was a man well worthy of being kept in memory; and both these eminent physicians may be held to be fortunate in having so genial and appreciative a historian. Dr Tuke takes occasion to defend the definition of "moral insanity," which was first laid down by Dr Prichard. This term got somewhat into discredit from being employed by adroit advocates to cover crimes, the perpetrators of which did not seem likely to escape punishment by any other device. Some of the cases adduced by Prichard as illustrations of his definition have had to be abandoned as being better classed under some other forms, such as delusional insanity, or *folie raisonnante.*

It may be said that even those who maintain the term of moral insanity do not insist that in the instances given there is no lesion of the understanding, but they argue that such intellectual deficiences are comparatively trifling, and that the significance of the cases consists in the moral callousness and proclivity to crime. Those who take an opposite view are inclined to affix a higher estimate to the intellectual deficiencies. Thus the dispute resolves itself into a question whether the term moral insanity be a prudent one, or likely to be misleading. In any case no one interested in the controversy can pass over Dr Hack Tuke's book. Not only does he himself state his views on the question with great skill and knowledge, but, by reprinting reports of the discussions which followed the reading of his papers, he gives us the diverse views of some of the most eminent physicians who devote themselves to the study of insanity.

Report to the Government of New South Wales, South Australia, and New Zealand, on the Koch method of treating Tuberculosis. By T. P. ANDERSON STUART, M.D., Professor of Physiology, and Dean of the Faculty of Medicine, University of Sydney. Sydney: George Stephen Chapman, Acting Government Printer: 1891.

THIS is one of the very best and ablest reports to Government we have ever read. Admirably arranged, lucidly written, and historically complete, it describes one of the strangest chapters in the history of human enthusiasm ever written. It describes the extraordinary enthusiasm with which Koch's communications were received, the rush to Berlin, the honours conferred on him, and those proposed but not conferred. The period of doubt which was soon followed by that of disbelief are also given in historical detail. Professor Stuart acts as a historian, not a judge. He gives documentary evidence for everything he describes, and has arrayed it all with a precision and accuracy which leaves nothing to be desired. The actual report to the Government is contained in 13 pages, but the volume is completed by Appendices on Tuberculosis, on Koch's Method of Cure, including Statistics and History. Under statistics, we find one extraordinary table which shows that 62 observers have detailed 1790 cases, which result in 11 cures and 54 deaths. Every library should have a copy of this most interesting brochure.

Les Microbes de la Bouche. Par le Dr TH. DAVID. Paris: Félix Alcan, Éditeur: 1890.

"OUT of the same mouth proceedeth blessing and cursing," and what is true of words seems also to be true of buccal microbes, which in countless numbers, according to our author, even in the healthy man, lie in wait, and have done so from prehistoric times, for opportunity to do evil, and ready to penetrate into bronchi, stomach, and intestines, and even into the cranial vault when opportunity offers. This is not surprising when one thinks that every breath of air, every draught of fluid, and every morsel of food swallowed must leave a portion of their microbic contents on the buccal mucous membrane. There the organisms find all that is needed for their acclimatization and multiplication: heat, humidity, and abundant food between the teeth, in the tartar, in mucous crypts, or in any place where dead epithelial matter may lodge and accumulate.

The treatise is dedicated to Pasteur, and in a prefatory notice written by that great man it is stated that this volume is the first which has made the knowledge of mouth-microbes common property. The book is illustrated with 113 figures, many of the best of which are in colours, and for them, as well as for much of the text, the author is indebted to the third edition of *Les Bactéries, par MM. Cornil et Babes.* On page 70 there is an extremely beautiful drawing (*d'après Biondi*) of salivary micro-organisms analogous to Pasteur's microbes of pneumonia.

The work consists of five chapters.

Chapter I. is general, and explains the various modes of cultivating, staining, and preparing the microbes for microscopical demonstration.

Chapter II. describes the non-pathogenic microbes, of which sixteen are enumerated, beginning with bacillus subtilis, and ending with the bacteria causing fermentations.

Chapter III. is devoted to the pathogenic microbes of human saliva, and gives the histories of the Pasteur and Friedlaender pneumococcus, and of the staphylo- and strepto-cocci concerned in the suppurative processes of the mouth.

Chapter IV. describes the pathogenic bacteria of buccal and dental affections, and includes among many others the tubercle bacillus; micrococcus tetragenus (which we have seen in enormous numbers in the sputa of a very acute phthisis); the organisms of muguet and various stomatites; diphtheria and dental caries, which latter subject is fully considered and illustrated with many of Miller's drawings, showing how the dentinal tubules become infiltrated with micrococci.

Chapter V. concerns itself with practical deductions, and with the treatment of caries and alveolo-dental osteo-periostitis; the rôle which bacteria play in the accidents attending the evolution *de la dent de sagesse;* how to sterilize when grafting teeth; effects of tobacco on mouth-bacteria,—and smokers will be glad to know, on the authority of MM. Tassinari and Miller, that micro-organisms do not like the fumes; and, lastly, fœtor of the breath. Thirty-three formulæ for antiseptic liquids and powders, adapted for the prophylaxis and cure of buccal and dental troubles, are here given. Some of the prescriptions are exquisite examples of polypharmacy, and one of them needs six months of maceration before its ingredients are ready for distillation.

A short appendix about the bacilli of influenza, for the elements of which the author is again indebted to the last edition of *Cornil et Babes*, and a *résumé général*, close a monograph, perhaps too dogmatic in its etiology, but nevertheless well deserving the laudatory words of M. Pasteur's prefatory letter.

Dust and its Dangers. By T. M. PRUDDEN, M.D. New York and London: G. P. Putnam's Sons.

THIS booklet, as the author says in his preface, "has been written with the purpose of informing people in simple language what the real danger is of acquiring serious disease—especially consumption—by means of dust-laden air, and how the danger may be avoided." He has accomplished his purpose tolerably well; his language is simple, and also, on occasion, very homely, *vide* page 46, where it is stated that inhaled dust particles may accumulate in the pulmonary lymphatic glands and make them "as black as your hat;" and the opposite page is enriched by a picture of a pulmonary lobe with its lymph-filters shaded to the proper degree of nigritude.

Being written for the general public, strong assertions are perhaps unavoidable; for instance, page 71 tells us that consumption is distinctly preventable, and that this most desirable end may be attained by destroying the sputa of diseased persons; again, page 73 declares that consumption is not inherited—a statement decidedly more comfortable than true.

Chapters IX. and X. are well worth reading for the suggestions they contain as to how dust dangers may be avoided out of doors and in public and private buildings, conveyances, etc. Chapter XI. administers a well-deserved and strongly-worded rebuke and censure of what is called "the especially American expectoratory prerogative." That the author's readers will lay his strictures to heart and improve their habits, or the average housewife adopt his recommendations as to sweeping and dusting, is perhaps to expect too much from routine human nature.

Études sur la Rage et la Méthode Pasteur. Par le Docteur LUTAUD, Rédacteur en chef du Journal de Médecine de Paris. Second Edition. Paris, 35 Boulevard Hausmann: 1891.

THERE is a class of men who like to worship idols, and a smaller class who like to witness the breaking of them. We should recommend this little book to the notice of the latter class. Dr Lutaud falls upon the great and venerated figure of Pasteur with a force and liveliness which will probably excite indignation in some, and amusement in others. Not only, he contends, are Pasteur's inoculations useless against the bite of mad dogs, but they are positively dangerous, as many people have already died from *la rage expérimentale.* M. Lutaud gives in detail eleven instances. The author argues that hydrophobia rarely follows even the bite of a dog undoubtedly rabid, and that scores of people go to get treated by M. Pasteur who have been bitten by dogs that never were mad at all. He pointedly asks, How the number of cases of hydrophobia have so much increased since M. Pasteur announced his infallible cure? The reputation of his method has been founded upon statistical details, and it is with statistics that Dr Lutaud attacks it. Not having any opportunity of comparing or verifying the figures either on one side or the other, we are unable to sit as judges on this controversy. Fortunately hydrophobia is a very rare disease in Scotland; few practitioners have seen a single case. Nevertheless it is not safe to be entirely ignorant on this subject. We read the other day in a newspaper that a nurse in an hospital in England, who had been bitten by a boy under treatment for hydrophobia, had been sent at once to Paris. Dr

Lutaud argues with apparent success that there is no evidence of hydrophobia being communicated from one human being to another. If this be correct, the medical men who sent the nurse to Paris needlessly exposed her to danger. After pouring a flood of argument and ridicule upon Pasteur's method of treating hydrophobia, Dr Lutaud attacks his other claims to medical reputation. He declares his vaccination against Charbon to be already abandoned by most veterinary surgeons. He affirms that it has caused great destruction amongst cattle in France, and has already been forbidden in Hungary. He asserts that M. Pasteur's claim of restoring fortune to the departments of the south by preventing disease amongst the silk-worms is wholly false, and that while he has enriched himself, the silk-worm eggs treated by his method are as liable to disease as any other sort. The company founded to make unalterable beer by the *procédé Pasteur* soon wound up its affairs, and his project of making wine keep by warming it was only adopted by the French army and navy. This made the wine so bad that the men preferred to drink water, and his *œnothermes* to heat the wine *à la système Pasteur*, have already been sold for old iron. The author ironically concludes that it is only as a financier that M. Pasteur has shown aptitude of the most remarkable character.

On Stertor, Apoplexy, and the Management of the Apoplectic State. By Robert L. Bowles, M.D., F.R.C.P. Lond., Consulting Physician to the Victoria Hospital, Folkestone; Fellow of the Royal Medical and Chirurgical Society; late President S.E. Branch of British Medical Association. London: Baillière, Tindall, & Cox: 1891.

This book is intended to show the effect which various positions of the tongue and soft palate have on breathing, and is also designed to prove that the Marshall Hall method of artificial respiration is superior to the one more commonly in use—the Sylvester. The author points out that wherever there is any difficulty of breathing, with or without stertor, when from any cause there is paralysis of the muscles of the tongue, as in apoplexy, for instance, this difficulty may be removed, the noise stopped, and the patient and his friends relieved, by the simple means of turning him on his side. At once the tongue falls forward, and allows of more easy breathing. The same thing applies to those apparently drowned, the recumbent position adopted in the Sylvester method of resuscitation causing the tongue to fall back. When, however, Dr Bowles goes on to state that this false position of the tongue is the chief cause of the difficulty of breathing in chloroform, he commits himself, for if the chloroform be rightly administered the tongue cannot fall back; and there are many cases on record in which, although the chloroform has been administered correctly, yet difficulty of breathing has occurred. In the Edinburgh School this danger of the tongue falling back has been long recognised, and one of the chief rules in the administration of chloroform in that School is, by keeping the head well back and the angle of the jaw forward, to prevent that very accident. Notwithstanding this, cases do occur, apart in any way from interference of the tongue, in which the breathing becomes laboured. In the same way, if, as is usually directed, a bundle be placed under the patient's shoulders, in using the Sylvester mode of artificial respiration, in such a manner that the head hangs sufficiently back, with the jaw placed well up and forward, no danger of the tongue falling back may be apprehended. Still, Dr Bowles' useful monograph will have done considerable good if it draws the attention of those who were unaware of it before to the dangers of malposition of the tongue in those unconscious or paralyzed, and unable to rectify the position of that organ themselves.

Leçons Cliniques. Sur les Maladies de l'Appareil locomotor (*Os, Articulations, Muscles*). Par le Dr Kirmisson, Professeur Agrégé de la Faculté de Médecine, etc. Paris: G. Masson: 1890.

These lectures, if typical of what is done in other departments, represent a very high standard of clinical teaching in the Hôtel-Dieu. The subjects treated of include the affections of bones, joints, and muscles, and in the thirty-six lectures before us considerable ground is covered. The cases used as texts are fully recorded, and all the points in connexion with each are carefully entered upon. In connexion with every feature of interest the discussion is systematic. Evidence is taken from similar cases known to the author or published by others, and the results of the most recent pathological research are brought forward to throw light on the clinical facts. What gives special value to these lectures is that the author, besides being widely read and familiar with the surgical work of other countries besides his own, sums up as to the relative merits of rival methods with evident fairness and with logical consistency.

We value these lectures as the careful work of an able man. They are no less interesting than profitable, and should be widely read in this country.

Illustrations of the Inductive Method in Medicine. By William Murray, M.D., F.R.C.P. Lond., Consulting Physician to the Children's Hospital, etc., Newcastle. London: H. K. Lewis: 1891.

Under this grandiloquent title Dr Murray has published a few addresses and papers, read and delivered at different dates, prefacing them with an essay on Induction as applied to Medicine. The essay itself, originally an address to students beginning the study of Medicine, seems to us to be a very unoriginal rendering of John Stuart Mill's imperfect doctrines, and what good there can be in publishing it we fail to understand. Suited, perhaps, to boys fresh from school, to most practitioners it will seem to consist of truisms. Many of the papers which follow, however, are illustrations of the deductive method; for instance, the first, on the Physical Action of Calomel, begins by postulating osmosis as the great factor in its action, continues by applying this factor to the facts, and deducing that it increases osmotic flow. The same postulate does duty again in the second paper, "The Relation of Digestion and Dyspepsia to Osmosis," while "The Self-Elimination of Poisons" is argued from the law that cells tend to throw off any irritant. The remarks on "The Dangers of Regular Habits" are interesting and logical, and a note on "Emphysematous Dyspepsia" is worth reading.

Handbook of Diseases of the Ear, for the Use of Students and Practitioners. By URBAN PRITCHARD, M.D. (Edin.), F.R.C.S. (Eng.), Professor of Aural Surgery at King's College, London; Aural Surgeon to King's College Hospital, etc. Second Edition, with Illustrations. London: H. K. Lewis: 1891.

WE have already had occasion to notice the first edition of this book, and from the opinion we then formed of its worth, we are not surprised that a new edition has now been called for.

The book has been carefully revised, and in part rewritten, so as to bring it up to date, and its value has been much enhanced by a detailed account of the methods of operating for disease of the mastoid antrum. The present position of cerebral surgery in relation to ear disease demands more than the passing notice which is here accorded to it, and in any future edition we hope to see this omission rectified.

The book is a thoroughly practical one, and we can recommend it as a safe and useful guide to students and practitioners who wish to study the subjects which it treats of.

Subjective Noises in the Head and Ears: their Etiology, Diagnosis, and Treatment. By H. MACNAUGHTON JONES, M.D., F.R.C.S.I. and E., etc., formerly Professor of Midwifery and Diseases of Women and Children in the Queen's University, etc. London: Ballière, Tindall, & Cox: 1891.

CHAPTER I. of this small brochure is a reprint of a paper read by the Author at the Birmingham meeting of the British Medical Association, and forms the groundwork of the present volume. To this have been added several chapters dealing with the diagnosis, prognosis, and treatment of tinnitus, and the methods of examining cases of ear diseases.

In our opinion no useful purpose has been served by thus expanding the original paper, nor has any very new light been thrown upon this distressing and troublesome symptom. The numerous illustrations consist almost entirely of instruments, but we fail to see that many of them are called for in a work devoted to a special condition and not to a general study of ear disease. It might have been supposed, for instance, that the reader would be familiar with the appearances of an ear speculum, a tuning-fork, a brass ear syringe, etc.

We do not think that the expectations roused by the resounding title will be realized by the student on perusal of this work. The book bears evidence of hasty writing, and shows many inelegancies of expression and a want of careful revision.

Cookery for the Diabetic. By W. H. and Mrs POOLE. With a Preface by Dr PAVY. London: Longmans, Green, & Co.: 1891.

THIS little book of recipes should prove serviceable to the friends, and especially to the cook of the diabetic. It is nicely got up, and all the recipes are vouched for by Dr Pavy, who has written the preface, as containing nothing that this class of patient should avoid.

Annales des Maladies des Organes Génito-Urinaires. Paris, July 1891.

Journal of Cutaneous and Genito-Urinary Diseases. New York, July 1891.

M. JANET contributes to the July number of the former of these journals a paper, "Rôle de l'endoscopie à luminère externe dans les maladies de l'urèthre et de la vessie—Ses indications," which contains the result of his work in the Genito-Urinary Policlinique of the Necker Hospital. In the first place he gives succinctly the history of the urethroscope, especially drawing attention to the work done by French surgeons (Désormeaux, Ségalas, Guyon), but points out that to Grünfeld of Vienna the credit is due of making the important change in the instrument of completely separating the source of light from the endoscopic tube, so that the urethra can be easily examined visually, and treated while the mucous membrane is seen by the surgeon just as the vagina can be by means of Fergusson's speculum. M. Janet then proceeds to enumerate the essentials for the efficient use of the instrument, and explains that his object is simply to show its advantages, diagnostic and curative, over other methods of examination, and to assign to it its true place in the therapeutic treatment of urinary diseases. With the premise that, in urethral maladies, the endoscope enables the whole mucous membrane to be examined, and its pathological appearances appreciated, he says that in *acute gonorrhœa* he believes it has no special value, but that in *chronic urethritis* associated with fissures, granulations, etc., it is invaluable, and compares the treatment of such cases without urethroscopy to the treatment of ulceration of the cervix uteri without the speculum. He does not advocate its use in all cases, but believes that it is an excellent addition to the old methods of treatment, and that a judicious combination of the two is invaluable. So also in *stricture of the urethra* the endoscope, more particularly the aèro-uréthroscope of Antal, shows the position and character of the stricture, and permits of suitable treatment being carried out under the eye of the surgeon. In cases of eccentric stricture where internal urethrotomy is to be practised, it is especially valuable, as the operator can see the part to be divided, and thus avoid injury to normal mucous membrane. He believes that in certain other urethral conditions, such as fistulæ, the presence of foreign bodies, and in diseases of the prostate, the instrument is useful.

After thus eulogising the urethroscope, M. Janet passes to speak of the place of the cystoscope in examination of the bladder. In relation to *vesical tumours* he mentions various difficulties which militate against its usefulness, *e.g.*, small capacity of the bladder, mucus and blood in the urine, and the large size of the tumour. He compares the cystoscope of Grünfeld, which has the light external, to the internal light cystoscope, and points out certain advantages in the former, more especially drawing attention to the facility which it affords for combined examination and treatment. In this connexion he relates cases where small tumours have been completely removed per urethram (Grünfeld 3, Antal 2). He further refers to catheterization of the ureters as suggested by Brenner, and describes the catheter used, and the method successfully adopted by Grünfeld. He points out that in cases of blood or pus passing from one kidney, the organ from which it comes can be determined. M. Janet arrives at the conclusion that both cystoscopes (light internal and light external) may advantageously be used together for purposes of diagnosis, but that therapeutic treatment is best attained with the external light.

This paper contains most interesting results gained by personal experience, and is an excellent proof of the value of the cystoscope in the diagnosis of many vesical or kidney diseases, but we believe that undue prominence is given to the rôle of the urethroscope in the diagnosis and treatment of urethral disease.

The article by Dr Tilden Brown, "Ocular and Tactile Demonstration of Urethral Lesions by the aid of New Instruments," in the *Journal of Cutaneous and Genito-Urinary Diseases,* contains an account of certain instruments, introduced by the author, which are most ingenious. The *urethral speculum* is to replace the endoscopic tube. The superiority of the former, in the opinion of Dr Brown, consists in "a continuous expanse of urethral surface along the four walls, from base to tip of the instrument" being seen, but this does not coincide with what immediately follows in the description of the instrument, as this expanse is not all seen at once, but must be brought into view by the mediation of a mirror similar to the laryngeal mirror. To verify and to elucidate the sense of sight, the sense of touch is added by means of the "*urethral digit.*" There then follows a detailed description of various instruments which have been introduced by others for examination of the urethra. The author is impressed with the value of these instruments, and says that instead of their use being exceptional in his urethral practice it is the rule.

We regret that we are unable to reproduce the figure demonstrating "the author's method of urethral illumination by electric light condenser," as we believe it would perhaps best induce surgeons to adhere in the main to the present methods of diagnosis.

Description of the Johns Hopkins Hospital. By JOHN S. BILLINGS, M.D., Baltimore.

A BEAUTIFULLY got up volume as to paper, printing, plates, and plans (fifty-six in number), being a description of one of the finest and best-equipped hospitals that has yet been anywhere erected, and all due to the magnificent munificence of the late wealthy, enlightened, and modest American citizen, Johns Hopkins of Baltimore, who was also the founder of the well-known University of that same city. This benefactor of his race handed over during his lifetime by deed of gift, dated 10th March 1873, to twelve trustees, thirteen acres of land in the above-named city, "upon which," in his own words, "I desire you to erect an Hospital capable of receiving 400 patients, and which shall, in construction and arrangement, compare favourably with any like institution in America or Europe," and which he specially desired "shall ultimately form a part of the Medical School and University," the latter of which he, as just stated, also founded. In order to enable the trustees to carry out his wishes, "he each year during his life, until the buildings are completed, places at their disposal 100,000 dollars," and hands over property to the value of more than a capital sum of 3,000,000 dollars (or what had reached that before his death), yielding an annual income of 180,000 dollars, for the endowment and support of the Hospital, and of a Home for 400 rphans, which he also desires should be erected. Such is the regal gift of Johns Hopkins, who on one occasion stated to a friend "that his wealth he was sure was given him for a purpose," that "it is my stewardship,"—and as a good and faithful steward he has used it.

The trustees soon commenced with their great undertaking, and in 1875 appointed five physicians, with whom the Building Committee were to confer as to the plan upon which the Hospital should be built, whether on the "pavilion" or the "barrack" system, and as to all the multifarious arrangements necessary in its construction. The work was most thoroughly done. The Committee visited the large hospitals in the eastern cities in America; "they employed five men supposed to be skilled in hospitals," each of whom wrote an essay on the same, giving his plans and suggestions. These were printed and widely circulated, and the criticisms they called forth were carefully studied. After this one of the five was selected, and sent to Europe to examine the recent model hospitals there built; and on his return he reviewed the whole matter, and with the Building Committee and the architect of the Board drew up an improved set of plans, which are now worked out in the splendid set of buildings erected in the city of Baltimore, and which were publicly opened on 7th May 1889.

The plan of construction is the pavilion system, with a very handsome building for administrative purposes to the front, and a pay ward on each side,—one for males, the other for females,—the founder having arranged in his deed of gift that some special accommodation should be provided for such cases. There are five blocks or pavilions at present finished, with a complete set of accessory buildings, viz., nurses' home—almost palatial, as judged by the drawings — kitchen, laundry, dispensary, amphitheatre, pathological department, and stables, all separate buildings surrounding the Hospital, and, excepting the laundry and pathological department, each connected therewith by means of a covered way.

The ventilation has been most carefully attended to, is after the most improved modern principles, giving excellent results; and the buildings are so arranged that no foul air can pass from one ward into another. Heating is accomplished by means of pipes with hot water or steam (175,000 gallons of water being contained in the pipes and boilers); and so perfect and so well under command is this plan of warming, that each pair of beds in a ward can, it is said, have their own temperature specially regulated, *e.g.*, one being kept at 70° F. and the next 60° F., etc.

The ordinary wards, which contain twenty-four beds each, are 99 feet 6 inches long, 27 feet 6 inches wide, and 15 feet high at the side walls, 16 feet in the clear in the centre, each bed having 7 feet 6 inches of wall space, 106·9 square feet of floor area, and 1768 cubic feet of air space. Every department is apparently equipped in the most perfect manner, and with all the latest and most approved improvements. Judging from the plans and elevations as given from different points of view, the buildings appear to be very handsome and elegant, and are finished in the most complete manner, regardless of expense, the leading desire being to have everything of the best.

This Hospital does honour to the munificent donor, and stands as a monument to his memory in the fortunate city in which it has been erected.

Des Troubles Trophiques dans L'Hystérie. Par ALEX. ATHANASSIO. Préface de M. le Professeur CHARCOT. Paris: Aux Bureaux du *Progès Médicale:* 1890.

THOUGH the anatomical lesion of hysteria has as yet escaped our means of investigation, certain alterations in the tissues have been observed which are treated in this volume under the name of *troubles trophiques.* M. Athanassio shows how both the fluids and solids of the body are sometimes profoundly altered in this disease. He describes a variety of skin affections and vaso-motor disorders, such as ecchymoses, subcutaneous hæmorrhages, symmetrical gangrene of the extremities, blue œdema, and swelling of the neck and mammæ, hyper-secretion of milk and bloody sweats, affections of the joints, and muscular atrophy.

In this work M. Athanassio shows much acquaintance with the subject, as well as diligence and learning in bringing out what has been contributed by others.

Transactions of the Association of American Physicians. Vol. V. Philadelphia: 1890.

WE regret that we cannot command space for a review of all the papers published in this volume. The first subject treated is the Natural History of Enteric or Typhoid Fever. The author, Dr Reeves, shows how this disease depends for its communication upon the presence of a bacillus which is capable of cultivation outside of the human body. There are papers on Inflammations of the Appendix and Cæcum, by Dr. N. Bridge; Shock and Sudden Coma, by Dr J. T. Dana; Some Disorders of Sleep, by Dr Weir Mitchell; Insomnia, by Dr C. Folsom, in which we have a useful estimate of the comparative value of the newer hypnotics. There is a study of the Anæsthesias of Hysteria by Dr C. Dana, and papers on the Etiology and Treatment of Migraine, the Nature of Tubercle, and the Diagnosis of Diseases of the Stomach. Altogether there are nineteen papers, which form a volume of varied interest, full of scientific and clinical observations of merit and originality.

The Thirteenth Year of the Boston City Hospital Training School for Nurses, Boston, Mass.; with Reports, etc., and Address to a Graduating Class. By THOMAS M. ROTCH, M.D.

THIS is a very interesting account of the Nurses' Training School in Boston Hospital. It shows that a high idea of a nurse's training and duties is successfully realized. A two years' course, a month of preliminary trial, and a very thorough system of instruction seems faithfully carried out. The staff of the Hospital are most liberal in communicating instruction, and the instruction seems to be of the right kind to make skilled nurses, not unskilled and conceited doctors. The address to the graduating class is interesting and sympathetic, though, perhaps, is too eloquent for our old world taste.

Transactions of the Twelfth Annual Meeting of the American Laryngological Association, held in the City of Baltimore in 1890. New York: D. Appleton & Co.: 1891.

A PERUSAL of this volume will show that the American Laryngological Society is a thriving, energetic, and hard-working body, doing good work. It contains seventeen papers and discussions, all of which it is impossible here to mention in detail; but it is no disparagement to the remainder to mention an interesting paper by Delavan, "On the Early Diagnosis of Malignant Disease of the Larynx," and a timely warning conveyed by Solis-Cohen in a paper entitled, "Look Beyond the Nose." This might be read with advantage on both sides of the Atlantic.

Part Third.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

BROMOFORM IN WHOOPING-COUGH.—Dr S. Schippers furnishes (*Nederlandsch Tijdschrift voor Geneeskunde,* 29th August 1891) further proof of the value of bromoform in cases of whooping-cough. Bromoform ($CHBr_3$) is a clear liquid, with a peculiar but not unpleasant etherial odour; its specific gravity is 2·9, or more than twice that of chloroform; it is soluble in alcohol and ether, and but slightly so in water; its taste is sweet; it does not affect the mucous membrane of the mouth, and is not irritant in its action. It is rapidly decomposed by light, bromine fumes being slowly given off. When used internally, no deleterious effects have been observed when administered in the following doses:—In children from six months to one year old, 2 minims thrice daily; from one to two years of age, 3 minims; from two to three, 4 minims; from three to four, 5 minims; and from four to seven, 6 to 7 minims may be given in a teaspoonful of syrup; for adults the dose is 0·5 to 0·8 g. in capsules. Dr Schippers in the trial of the drug in his policlinic and in private practice had treated 250 cases, and he summarizes the results of his observations thus:—1. Bromoform in the doses advocated is a completely harmless remedy. 2. The paroxysmal attacks diminish not only in number, but also in severity, while the mucous secretion is more easily got rid of. 3. It markedly shortens the duration of the attack. 4. The post-paroxysmal vomiting disappears in from two to three days. 5. Nasal and other forms of hæmorrhage cease also in a short while. 6. It acts beneficially when complications such as pneumonia supervene, as by lessening the attacks of coughing, rest is afforded to the affected organs. As to the rapidity of its action in effecting a cure, he differs from Stepp in that sometimes the time is extended to eight weeks. Two cases of bromoform poisoning have been recorded (*Therapeutische Monatshefte*, December 1890 and January 1891)—a child having in each case taken a large quantity of the pure drug from a phial which had been carelessly left within its reach. Symptoms of extreme collapse supervened, but both cases made good recoveries under the prompt employment of restoratives. The drug should, therefore, always be kept in the dark, and out of the reach of children. The manner in which it acts, whether as an antiseptic or as a specific, is still obscure.—*Supplement to the British Medical Journal*, 19th September 1891.

THE INTERNAL USE OF RESORCIN.—Resorcin has not been employed to any very great extent as an internal remedy, its use being chiefly confined to external applications. Dr H. Menche has, however, been giving it in many internal disorders for a number of years, and reports his results in an article in the *Centralblatt für Klinische Médicin*, No. 21, 1891. His first essays were made in cases of cholera infantum, for which he gives a prescription containing from five to seven grains of resorcin in three ounces of simple syrup and water, a few drops of compound tincture of gentian, or, if thought necessary, a minute quantity of laudanum being added. In cholera nostras also good results were obtained, the vomiting being speedily controlled and the patient making steady progress towards recovery. The author holds that resorcin is indicated in all forms of gastritis, in the dyspepsia following indiscretions in eating or drinking, in acute and chronic gastric catarrh, and in rumination. In acute ulcer of the stomach, however, the drug is contra-indicated. In the vomiting of pregnancy, in sea-sickness, and, indeed, in all forms of vomiting, from whatever cause, Dr Menche recommends resorcin as of undoubted utility. He also used it with apparently good effect as an hypnotic in a few cases. The remedy was given in solution or in powder, the dose for adults being from 1½ to 2 grains every two hours. As an hypnotic, he is in the habit of ordering a single powder of 7½ grains at bedtime. For sea-sickness he gave 1 or 2 grains in sugar of milk every two hours, and reports some very successful cases of this treatment. Of course, he insists upon the necessity of obtaining a perfectly pure specimen of the drug in order to secure the results desired (*Medical Record*, July 11, 1891).—*Therapeutic Gazette*, September 1891.

TASI—A SOUTH AMERICAN GALACTAGOGUE.—A South American asclepiadaceous plant, *Morrenia brachystephana*, Griseback (first described by this botanist in his *Plantæ Lorenzianæ*, No. 575), has long been reputed among the natives of Argentina as an excellent galactagogue. Attention has recently been drawn to it in Europe by a paper submitted to the German Chemical Society (*Berichte*, 1891, p. 1849), by Dr Pedro Arata and Carl Gelger, on the chemistry of the plant. Dr Arata, who is a member of the National Board of Health of the Argentine Republic, has made systematic experiments with the *sap* of the plant during the past eighteen months. He reports the case of a woman whose milk gave out seventy days after the birth of a boy. An infusion of the milk sap of the plant was administered to here, when, after a very short time, an abundance of milk was secreted, so that the child could be fed without the aid of a nurse. The average daily dose administered was 30 grammes (about 1 ounce). The infusion prepared from the sap is yellowish and slimy, and has a sweetish taste, with a bitterish after-taste. It is not disagreeable to take, but when first administered causes a slight nausea and a little headache, also an increased perspiration, but no other untoward symptoms. The rhizome and fruit of this plant contain an abundance of a milky juice, which is used by the natives as a domestic remedy in various diseases, but has an especial reputation as a milk-maker (*American Druggist*, August 15, 1891).—*Therapeutic Gazette*, September 1891.

HYDRASTIS CANADENSIS IN THE TREATMENT OF NIGHT-SWEATS IN PHTHISIS.—Dr Cruse states, in the *Internationale Klinische Rundschau* for June 7, 1891, that having occasion to use this drug recently in some cases of hæmoptysis occurring in consumptives, he found that in addition to the favourable influence on the pulmonary hæmorrhages, that the night-sweats, which before had been very distressing, were now entirely prevented. This effect was especially marked in one case in the last stage of phthisis, in which he had been for some time compelled to resort to the almost continuous employment of hydrastis for pulmonary hæmorrhages, and in which the night-sweats were by this treatment entirely arrested. The author also refers to several other cases in whom atropine, agaracine, sulphonal, and ergot had only at first given some relief, and afterwards proved inefficacious, and in whom he had resorted to the hydrastis, giving 30 drops each evening of the fluid extract. In all great relief of the night-sweats was obtained.—*Therapeutic Gazette*, September 1891.

NAPHTHALENE AS A VERMIFUGE.—In the *Mercredi Médical* for 20th May, Dr Mirovitch of Biélsk speaks of naphthalene as the best agent for expelling tænia. In his opinion it is superior to all other remedies, because of the certainty of its action and the absence of all toxic effect, for it is absorbed in but very minute amount by the gastro-intestinal mucous membrane. The dose for adults is

15 grains, given when the stomach is empty, and followed immediately by two tablespoonfuls of castor oil. Children may take from 4 to 8 grains, and at the same time a tablespoonful of castor oil flavoured with a few drops of essence of bergamot. During the two days preceding the administration of the drug the patient is to eat freely of salted, acid, and spiced food. Dr Mirovitch states that in all his cases one dose of naphthalene was sufficient to expel the tapeworm, the head included, even in cases in which other drugs had failed. He has also found the drug most effective in the treatment of patients with ascarides (*New York Medical Journal*, August 15, 1891).—*Therapeutic Gazette*, September 1891.

MEDICAL PERISCOPE.

By Francis Troup, M.D.

Berliner Klin. Wochenschrift, No. 33, 1891.—Dr K. Ortmann of Keil relates a case of severe chronic diarrhœa, apparently caused by the protozoon Balantidium coli. Since its discovery by Malmsten of Stockholm in 1856, only twenty-seven cases have been recorded. Authors who relate cases differ in opinion as to whether the balantidium is to be looked upon as an indifferent parasite or as the cause of the morbid condition, which in most of the cases is described as chronic catarrh of the large intestine. Ortmann's case presented the same clinical picture of persistent diarrhœa uninfluenced by treatment. Many microscopic examinations of the stools had been instituted before the parasite was discovered in great numbers in the clots of mucus discharged. No fever being present, the existence of a tubercular condition of the intestine seemed to be excluded; and Koch's fluid, injected to the extent of 5 milligrammes, caused no reaction. Treatment directed against the balantidium was then commenced after certain experiments had been made as to its mode of life and the effect of medicaments upon it. This latter was carried out by the hanging drop method: a drop of the medicine was mixed with a drop of the stool containing the balantidia, and examined under the microscope in comparison with a drop of the pure stool. Quinine of the strength of 1 in 1000 seemed most effectual, the death of the parasite taking place in five minutes, while those in the control drop lived two and a half hours.

The bowels were now washed out with clysters of Ems salts, and an hour afterwards an enema containing the medicine selected—if tannin, of 1 per cent. strength; if quinine, of 1 per 1000—was injected and retained for a quarter of an hour. As was expected from the experiments, the quinine was most efficacious, but the balantidia did not disappear entirely. Quinine was therefore given by the mouth in addition to the clysters; and to prevent its absorption in stomach and upper reaches of the bowel, it was given in pills coated with artificial keratine.

Ortmann by no means asserts that the parasite was the real cause of the obstinate diarrhœa; but considers this likely from the fact that the purging diminished, and was finally set aside by means which caused the death and disappearance of the balantidia. Three months afterwards the patient presented himself at the clinique, and it was found that his stools were of normal consistence. Long search was rewarded by the finding of one sample of the parasite in the mucus of a fresh stool. They were therefore not entirely removed, but existed in numbers insufficient to cause a renewal of the diarrhœa.

Ibidem.—Dr B. Lewy draws attention to cases in which he has found Charcot-Leyden crystals in polypi of the nose: the tumours were all of a benignant nature. The crystals are not present in the polypus ready made, but appear first in the preparation which is made by taking a morsel of the growth and crushing it between the slide and coverglass. After a time, longer or shorter, the crystals show themselves. Little needles are to be seen forming between the cells and in the fluids of the crushed morsel; they grow rapidly, just as crystals do from a mother solution, and meantime more needles in other places emerge and gradually enlarge to the well-known double pyramids.

Ibidem.—Dr Miessner relates experiments made on mice and rabbits with allylalcohol. It causes violent irritation of mucous membranes, great dilatation of the bloodvessels, diminished blood-pressure, causes albuminuria, and is dangerous in very minimal doses. Death is ushered in by dyspnœa, convulsions, and asphyxia. Narcosis, in contradistinction to all other alcohols, was not noticed.

Ibidem, Nos. 34 and 35.—Drs G. and F. Klemperer publish researches as to the production of immunity against, and the cure of pneumonia. They set out with the proposition that it is possible to render the animal body immune against any infectious disease, by a preliminary incorporation (*Einverleibung*) of the metabolic products of the relative micro-organismal cause of the disease. Our ideas as to immunity, how it is brought about and what it really is, are still in a very fluid condition. But translate immunity in any way we please, one thing is certain, that it has close relations to cure, and one might be tempted to say that infectious diseases are curable by the metabolic products of the germ which causes them. For whether immunity be explicable by the "retention," "exhaustion," or "phagocytic" theory, it comes always to this, that immunity places the organism in a position to withstand successfully later attacks of the disease. The departure point of the authors' labours was to determine, if possible, whether Nature, when infectious disease ended in cure, made use of bacterial metabolic products.

Naturally this question must be examined and determined separately for each infectious disease; the results obtained for one disease are not to be accepted without further to do for all others. There is one disease, however, which fulfils every necessary condition, whose excitant is known and is pathogenic for animals, and the healing of which is typical and characteristic and usual. This disease is pneumonia. What has happened to the patient who, after five or seven days of fever, becomes well as if by a stroke? The cocci causing the disease are not dead, and have not lost their power of poisoning; they are to be found, days and weeks after the crisis, still living in the sputum, and are still capable of infecting other animals. The crisis is therefore not to be explained by a mere alteration of the bacteria. Something must have altered in the medium on which the cocci grow in the human body. Two possibilities are open—that the coccus forms no more poison in the body which has passed through the crisis, or that any poison formed has no more noxious power over that body. Is it therefore some product of the pneumococcus itself which so alters the soil, and brings about the crisis?

The authors have attempted, by cultures and experiments on rabbits, to answer this question. Their task fell into two parts,—they had to immunize animals against the pneumococcus and to cure animals already diseased, and to establish firmly the processes which lay at the bottom of this curing. Then it was also necessary to prove and demonstrate the analogies of those relations in animals and man.

They found that any nutrient medium in which the pneumococcus had grown, even after removal of the coccus itself by filtration, immunized against the pneumococcus-septicæmia. That exposure to a temperature of 60°–65° Centigrade for one to two hours made the immunizing solution more efficacious.

In all cases a certain time elapsed after the introduction of the immunizing stuff before the immunity was obtained: in intravenous injections it was three days, in subcutaneous ones it was fourteen, before the animals withstood the action of virulent pneumococci.

The serum of the blood of animals, whose immunity against big doses of virulent cultures was established, was found to cure pneumonia already in progress if introduced into the circulation. To be sure that it was actually a cure, they waited for twenty-four hours after the infection till the animals had a temperature of 40° to 41° Cent. Eight ccm. were injected into the ear vein, and the temperature gradully fell to normal in twenty-four hours. This positive result has been obtained in twelve cases; a few animals died when they injected subcutaneously instead of directly into the blood. This curative serum of the immune rabbit is also capable of bestowing immunity. The authors waited in one case one day, in another fourteen, in a third four weeks, after injection of the serum before inoculating the animals with the pneumococci, and found that no pneumonia resulted.

How does this blood serum of an immune animal cure? It does so by rendering harmless the poison which the pneumococci have already formed. This poison, called by the authors "pneumotoxin," can be isolated: it is it which causes the febrile condition, and after this has lasted a few days another substance—"anti-pneumotoxin"—is formed, and it counteracts the pneumotoxin; and it is the presence of this antitoxin in the serum which cures.

The authors conclude from their investigations that the pneumonia of man and of rabbits is caused by the pneumococcus, but the latter animal is extremely susceptible to the disease. The pneumococcus may live in the human body on sound mucous surfaces without doing its host any harm; it has been found in the saliva and sputum of sound men, and Fränkel discovered it in his own sputa, and christened it the coccus of sputum-septicæmia. The authors demonstrated, by experiments on themselves, that a healthy man can bear with impunity a dose of pneumococci cultivation which would slay a rabbit. What makes man so intensely ill during an attack of pneumonia is the resorption of the poison produced by the bacteria growing in the exudations; it is the pneumotoxin circulating in the blood which endangers the respiratory and cardiac centres.

The authors found that the post-critical serum of the blood of men who had recovered from pneumonia cured rabbits ill of pneumonia: this serum was obtained by blood-letting, and in several patients from the serum of blisters. For three months they have been experimenting on pneumonic patients with the curative serum, after satisfying themselves that the stuff was perfectly indifferent to healthy men. They are not yet in a position to communicate the histories of the cases, and they look upon their experiments as purely tentative. In no disease are the effects of remedies to be more strictly scrutinized than in pneumonia. It heals of itself so frequently, that the *post* may easily be confounded with the *propter hoc.*

Ibidem, 35.—Dr Popoff relates experiments with tuberculin on rabbits. He finds that—

1. The fluid contains no micro-organisms of a pathogenic nature, and causes no tuberculosis in animals.

2. It causes no general reaction in tubercular rabbits and guinea-pigs.

3. It is powerless to confer immunity on rabbits, although injected in doses of 2 to 5 milligrammes for several weeks.

4. It does not delay the progress of tuberculous processes in rabbits.

5. During the first twelve to twenty-three days of treatment the general condition of the animals improved,—they had better appetite, increased in weight, and fever diminished; but later on fever increased, appetite and weight diminished, and the tuberculosis proceeded just the same as in animals which had not been treated by the tuberculin.

6. Under the influence of the Koch injections, the sputa of tuberculous persons does not lose its infectious powers.

7. In regard to its influence on tubercular tissues, it seemed to increase the hyperæmias, hæmorrhages, and necroses natural to the process, and, moreover, to cause inflammatory symptoms, which were not usual concomitants of tubercular affections.

Centralblatt f. Bakter. u. Parasitenkunde, Band x., No. 10.—Dr Bordoni-Uffreduzzi of Turin relates his experiments on the resistance of the pneumonic virus in the sputa to the operation of drying and exposure to diffuse daylight and to the rays of the sun. He took the expectoration of severe cases of pneumonia in its first stage, and having satisfied himself by inoculations on rabbits that the sputa were virulent, he dried the material on pieces of linen cloth, so as to imitate as closely as possible the conditions met with in actual practice. Those rags were exposed in a room to diffuse daylight, and partly to the direct rays of the sun. The experiments were made in May and June of this year, and the room temperature fluctuated between 64° and 70° Fahr.

Every second or fifth day he took pieces from the rags dried in daylight, and every second hour, or thereabouts, from those dried in the sun, put them into 4 or 5 ccm. of sterilized water; when the expectoration had swollen he loosened it off the rag, diluted with sterilized water, and injected his rabbits subcutaneously with the solution. The following Tables show his results:—

TABLE I.

Rabbits Inoculated.	Duration of the Drying by Diffuse Daylight.	Result of Inoculation.	Post-mortem.
1	2 days.	Death after 4 days.	Diplococcal septicæmia.
2	5 ”	” 4 ”	”
3	7 ”	” 3 ”	”
4	8 ”	” 3 ”	”
5	19 ”	” 5 ”	”
6	14 ”	” 5 ”	”
7	19 ”	” 2 ”	”
8	25 ”	Remains alive.	Infection limited to site of inoculation.

TABLE II.

Rabbits Inoculated.	Duration of Drying by Daylight.	Result of Inoculation.	Post-mortem.
1	5 days.	Death after 5 days.	Diplococcal septicæmia.
2	10 „	„ 3 „	„
3	15 „	„ 2 „	„
4	20 „	„ 3 „	„
5	25 „	„ 4 „	„
6	30 „	„ 4 „	„
7	35 „	„ 3 „	„
8	40 „	„ 4 „	„
9	50 „	„ 5 „	„
10	55 „	„ 4 „	„
11	60 „	Still living.	„

TABLE III.

Rabbits Inoculated.	Temp. 88° to 93° Fahr. Duration of Drying in Sun.	Result of Inoculation.	Post-mortem.
1	1 hour.	Death after 6 days.	Diplococcal septicæmia.
2	2 hours.	„ 2 „	„
3	4 „	„ 27 „	Great emaciation.
4	6 „	„ 6 „	Diplococcal septicæmia.
5	9 „	„ 5 „	„
6	12 „	„ 8 „	„

With the exception of the rabbit No. 3, which lived twenty-seven days, and although greatly emaciated yet at the autopsy no micro-organisms could be found in the blood, all the others died of the usual form of septicæmia.

From these results it is plain that the pneumonic virus in the sputa possesses great resisting powers against drying and the direct action of the sun. They agree, moreover, with the observations already made regarding the degree of resistance of the diplococcus in the blood of infected animals; and the minor resistance of the micro-organism in cultures may well be explained by the fact that in expectoration, as in blood, the albuminous stuffs which they both contain when they dry form a protecting envelope for the contained diplococcus.

The conclusion may also be arrived at, that for the prophylaxis of pneumonia disinfection of the sputa alone is not sufficient, but that means should also be taken to disinfect the dwellings, because the dried sputa remain so long virulent, and at last reaching the air in the form of dust, may easily effect a transference of the infectious materials to healthy people.

Berliner Klinische Wochenscrift, No. 39.—Drs Paul Guttmann and P. Ehrlich have been trying the effect of methylene blue in malarious fevers. They assert that it has a most pronounced effect against malaria. The paroxysms of fever disappear during its use in the course of the very first day, and the plasmodia vanish from the blood in eight days. This is an astonishing thing; during all those years synthetic chemistry has striven in vain to prepare a means which would have a healing power over malaria. Chemically pure material was used in doses of ·1 gramme in capsules five times daily. Methylene blue in such doses causes no unpleasant secondary consequences. The only one observed was a spastic irritation of the bladder, which, however, was easily removed by the exhibition of *powdered* nutmeg, which was found more useful than the ethereal oil.

Methylene blue increases the amount of urine; no albumen could be found, but the authors recommend continued attention to this point. The urine is coloured intensely blue. The intestinal evacuations contain the drug in a reduced form, and consequently do not become blue till exposed to the air.

The authors cannot say whether relapses will be prevented by this treatment, and it also remains for the future to tell whether a combination of quinine and methylene blue will cure the tropical forms of malaria which defy quinine by itself.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Leprosy in New South Wales.—It would seem, from a report published by the Legislative Assembly in May 1891, that till 1889 the number of Chinese affected with leprosy was slowly increasing, while it was not unknown among the European population. An Act was passed in 1890 providing for the compulsory notification of cases of leprosy, and for the establishment of a lazaret for the reception and treatment of lepers. A site at Little Bay has been set aside, and new and well-arranged buildings erected, into which the lepers were transferred under the charge of experienced wardsmen and the superintendence of the medical officers of the Coast Hospital. Cases of leprosy among the native-born European population of the colony were reported in the medical journals as long ago as 1873, but the spread of the disease has been very gradual. The total number under the care and control of the Board from 1883 to April 30, 1891, has been twenty-five cases, of whom seven were natives of New South Wales of European parentage, and all, except one, males. From a careful consideration of these cases, there are no data on which to advance a view of spontaneous, climatic, dietetic, mal-hygienic, or hereditary origin of the malady, and nothing of scientific accuracy to be adduced as to contagion, though the evidence in several cases points more or less strongly in this direction. There appears to be every reason to believe that all the cases among the Chinese, as well as the European cases, developed in New South Wales, although in the Chinese cases the seeds of the disease may have been brought from China. The decrease of the disease would appear to be solely effected by "the exclusive dealing with the individual leper as himself the source of ill to others."

ACTINOMYCOSIS OF THE FACE.—This is still such a comparatively rare complaint, that the case so admirably related by MM. Darier and Gautier possesses features of much interest. This patient was a female, aged 25, engaged as a cook. Her parents were butchers and in good health, and she was unaware of any ailment resembling hers in her home or neighbourhood. In Oct. 1890 she noticed a small nodule like a pea in the centre of the right cheek. This was deep-seated, nearer the bone than the skin. Though movable on the former, there was neither pain nor swelling, but it gave rise to some pricking sensations and annoyed her. A month later the nodule had become adherent to the skin, and the surface was red, tense, and shining, so as to resemble an abscess. This burst spontaneously and a little pus escaped, but it did not in consequence become smaller. Other similar nodules now appeared near the former one. These became red and swollen, then yellow in the centre. There was now considerable pain, particularly when pressed. In December 1890 she came to the St Louis Hospital, and the local condition was as follows: Almost the whole right cheek was occupied by a red nodular patch. The surface was a reddish violet, like some examples of lupus. It was covered here and there with large scabs. The affected area was little elevated, but there were situated in it about six hemispherical nodosities, each about a third of an inch in diameter. These were soft to touch, and more or less fluctuating. They rested on a very hard base, of a cartilaginous consistence. The indurated mass was not movable on the bone. The temperature of the part was markedly increased. It was very painful on palpation, but only moderately when uninterfered with. There were no neuralgic pains proper, nor pains radiating from the teeth. In the pus from one of the swellings yellowish-white rounded granules were found, which broke down easily when crushed, and under the microscope could be recognised as actinomyces. The mode in which the disease was communicated was in this, as in other cases, not ascertained. But some months before she had a dental abscess above the second right central incisor tooth. The treatment consisted in the employment of an electro-chemical method. Two platinum needles, connected with the two poles of the battery, were inserted into the nodules, while several drops of a 1-10th solution of iodide were injected by means of a syringe every few minutes into the tumours. The treatment was carried out under chloroform, in sittings of twenty minutes' duration every week. Apparently a great change for the better seems to have followed this mode of treatment, but it does not seem certain if the case is actually cured from the statements, though such seems possible.—*Annales de Dermatologie et de Syphiligraphie,* June 1891.

A DERMIC VARNISH.—Picle, who originally introduced the now well-known gelatin preparations, has added to our armamentarium a drying liniment or varnish. This has the advantage over the glycerine jellies that it needs no heating, is simply and easily applied, merely by being smeared thickly over the part, and can as readily be washed off. It is composed of tragacanth 5·0, glycerine 2·0, and distilled water 100·0. It can be prepared in this way with cold or hot water. If with cold, the finely powdered tragacanth is slowly added to the proper quantity of fluid, and rubbed up in a mortar till it assumes a consistence like lanoline, and is uniformly smooth. When applied to the skin it gives rise to a pleasant sensation of coolness, and dries into a fine, smooth colourless layer, which, if the skin is not inflamed, causes no further sensation; if inflamed, it produces a feeling of tension. Many substances can be readily combined with it, such as tar, ichthyol, storax, chrysarobin, zinc oxide, etc. Some of these impart to the liniment the consistence of a paste, but do not further interfere with its character except high percentages of tar, which cause it to dry more slowly. —*Archiv. für Dermatologie und Syphilis,* 1891, Heft 4.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

EXPERIMENTAL INOCULATION WITH CULTIVATIONS OF PYOGENIC ORGANISMS.—Dr P. Reichel gives the results of varied series of experiments in which dogs (as the animals which proved most suitable) were inoculated with pure cultivations of the staphylococcus pyogenes aureus, or filtrates containing the toxic principle of the organism. The inoculation was by intra-peritoneal injection, in gradually increased dosage, at intervals of two or three days. Each observation of the action of the organism upon a previously inoculated dog was controlled by the administration of a similar dose of the *same* cultivation or filtrate upon a sound animal unprotected by inoculation. The injections caused (1) local reaction —peritonitis, and (2) signs of general septic poisoning. In the case of the non-protected animal symptoms were very severe, and local inflammation most virulent, death following after twenty-four or thirty-six hours; or, if the dose were not lethal, a slow and painful recovery was made. The dog which had been repeatedly inoculated with small but increasing doses of the organism, on the contrary, bore the injection of a similar lethal dose without anything beyond a temporary and not very profound departure from health, appearing quite well after twenty-four hours. Reichel, in fact, found,—(1), that inoculation of the pure cultivation of the organism in proper doses, and at definite intervals, eventually produced immunity from the action of the bacillus in poisonous doses; (2), that inoculation of the ptomaines (obtained by filtration) similarly afforded immunity from their poisonous action; and, (3), that inoculation of ptomaines afforded protection from the organisms themselves. In one experiment Reichel succeeded in protecting one animal by inoculation with the blood serum of another which had repeatedly been inoculated with the pure cultivation—the serum itself containing no organisms. The immunity produced he regards as both general and local, after a time there being no peritonitis induced by the injections; yet even in previously inoculated animals there at times occurred, at the site of injection, inflammation or abscess formation in the subcutaneous cellular tissue. Reichel regards this as simply to be explained by the fact of protection not having been absolute in these instances; but emphasizes the fact that while large and even lethal doses caused, after sufficient previous inoculation, almost no peritoneal reaction, yet a comparatively small quantity proved sufficient to set up subcutaneous inflammation, which in some cases had a fatal issue. This, he says, does not tally with one's notion of the extreme susceptibility of the peritoneum to septic influences, and the danger to it lies rather in prolonged contact of the poison than from a single infection. It was found that while *metastasis* occurred as a feature of the suppurative changes induced by the staphylococcus, the ptomaines or poisonous products of the organism only induced a *local spread* of the inflammatory area. The cause of the immunity thus experimentally procured is not elucidated.—*Archiv. für Klin. Chirurgie*, 42 Band, 2 Heft.

NEUROMA CIRSOIDEUM.—Professor P. Bruns (Tübingen) reports four cases observed during late years by him of this condition; in three of these the tumours were on the head, in one on the back. He likewise tabulates forty-two cases of this nature observed by various surgeons, eight of them by himself. In his view the growth is of the nature of elephantiasis (*i.e.*, elephantiasis neuromatodes), and consists in a connective tissue increase of the peri- and endo-neurium of the nerves of a localized area of skin. In support of this contention Bruns adduces the following facts:—Hereditary tendency (very notably in seven instances); occurrence as congenital condition or in very early youth; situation in the subcutaneous connective tissue, and usually on the side of the head and neck, region of ear, and upper eyelid; and combination with other formations which are of the nature of elephantiasis, with pigment spots over the body, warty developments, multiple fibromata of peripheral nerve trunks, and multiple soft fibromata (fibroma molluscum). In one instance a tumour of this sort existed together with a diffuse soft elephantiasis of the arm; and Professor Bruns looks upon the condition as a manifestation of congenital elephantiasis, in nature identical with multiple fibromata of the skin and nerve trunks.—*Beiträge zur Klin. Chirurgie,* 8 Band, 1 Heft.

HIP-JOINT DISEASE.—Dr Huismans has collected records of 128 cases treated in Professor Czerny's clinique during the years 1877 to 1886. Of these, 70 per cent. occurred before the age of 20, and 24 per cent. later in life; 8 per cent. between 1 and 3 years; one case over 50 years of age. In 66·9 per cent. the patients were males, in 33·1 per cent. females. The left hip was affected in 57·03 per cent. of the cases, the right in 42·18. As to the causation, Huismans traced a hereditary taint only in 11 cases, and a traumatic origin in 19; only in 41 cases did records permit of any cause being traced. Cases treated without resection (*i.e.,* by incision, or fixation, or traction, massage, etc.) gave a mortality of 26 (40·62 per cent.), phthisis and amyloid disease accounting for most of these; 38 patients (59·4 per cent.) in this group still live, 18 quite well with moveable joints, 8 with stiff ankylosed joints, 11 with phthisis, or sinuses locally. In 41 cases resection was done, twenty-five times below the trochanters, with a mortality of 17; twelve times through the femoral neck, with 4 deaths; twice between the trochanters, with 2 deaths; and twice the exact method was not noted. In 5 of these cases the acetabulum was perforated; it was diseased in 30 cases—80 per cent. Of the 41 cases, 8 now live, 5 of them in good health (after four years); 24 patients died, 14 in hospital within nine months, 10 after discharge within two years; 9 cases could not be traced. As regards joint-mobility in the case of the surviving patients, Huismans finds that of 3 sub-trochanteric resections free movement exists in 2 cases, and anchylosis in 1, but that all required support of a crutch or stick; that of 4 resections by division of the neck of the femur, free movement resulted in 1 case (the patient requiring a stick), anchylosis in 2, and restricted movement in 1 (all three walking without support). In Professor Czerny's clinique experience tends to support the conservative method as giving no larger mortality than resection, and better results as regards restoration of function; but resection tends to save life in cases of acute suppuration and destruction of the joint.—*Ibid.*

NEW INDICATION FOR WLADIMIROFF-MIKULICZ OPERATION.—Professor Bruns applies this procedure to the treatment of aggravated, old-standing talipes equino-varus of paralytic origin. The bony surfaces were sutured in his cases, and the result proved satisfactory.—*Ibid.*

PROSTATECTOMY.—Dr K. Eigenbrodt (Bonn), dealing with the subject of the radical treatment of prostatic hypertrophy, records five cases in which during the past five years Professor Trendelenburg has deemed it justifiable to perform prostatectomy. In all but one case the state of the patient was extremely bad, and only in that one was the result fully successful, *i.e.*, restoration was procured of painless and voluntary micturition which had previously been lost. Two cases were partially benefited, but suffered afterwards, one from cystitis and fistula, the other from cystitis and a bladder concretion ; two cases showed a bad result, in one instance death following in three months from septic absorption. Eigenbrodt considers together with these five cases other recorded prostatectomies, both supra-pubic and perineal, and argues that relief has been given by early operation (as in Trendelenburg's successful case), and that, even where all bladder power is lost, catheterization is easier after the operation than before. He further argues that clinical records are hostile to Guyon's objection that attacking the prostate cannot yield results, seeing that the real trouble is "sclerosis" of the whole urinary tract. Dr Eigenbrodt, however, insists on the necessity after operation of ensuring thorough periodic emptying of the bladder, for he believes there will generally be residual urine. The technique of Trendelenburg's operations is also detailed—transverse supra-pubic incision; opening of bladder near its apex; removal of all prominences on the floor, so as to bring the inner urethral orifice to the level of the bladder wall.—*Ibid.*

PROFESSOR ROSE'S OPERATION FOR CANCER OF THE RECTUM.—Dr Maass, together with an account of those various modes of operation for this disease in which the bowel is reached after removal of coccyx or part of sacrum, records six cases of Rose's operation, in which the sacrum is exposed and divided transversely by bone forceps as high as possible in the great sacro-sciatic notches. The spinal canal is opened and the cauda-equina divided, but from these lesions no evil results follow, probably from the crushing produced by the forceps, closing the open canal. The access thus obtained is naturally very free, and permits extensive operations on pelvic contents. The six recorded cases were :—(1.) Extirpation of rectum and amputation of prostate for carcinoma ; (2.) Carcinoma of rectum and sacrum, etc. ; (3.) Carcinoma of rectum and sigmoid flexure ; (4.) Carcinoma of uterus and vagina ; (5 and 6.) Carcinoma of uterus. In the last two uterus and ovaries were removed. —*Deut. Zeitschrift für Chirurgie*, 32 Band, 3 u. 4 Heft.

DISSECTION OF NEW-FORMED HIP-JOINT AFTER RESECTION.—Dr Sack removed the pelvis and soft parts round, from a patient of Professor Czerny's who, after complete recovery of health, and with good use of the joint operated on, died after three years of tubercular disease of lungs, etc. The muscles about the hip were found converging to a portion of bone representing the great trochanter, but much shortened and pressed together. A capsule was found mainly composed of and strengthened by tendinous expansions from the peri-articular muscles. A synovia-like fluid escaped from the joint when an opening was made, and the capsule was found lined by a continuous smooth and glistening membrane. The lesser trochanter appeared mainly to have assumed the place and purpose of the femoral head, being much enlarged; the new greater trochanter also, but in subordinate degree, entered into the formation of the new articulation. The new joint surface of these bony parts was covered (as found on microscopic examination) by a fibrous layer, beneath which and gradually blending with it was a distinct layer of cartilage, which was obviously of recent growth, fat globules being observed close to the cells. Dr Sack believes that in time the fibrous layer would entirely have been replaced by cartilage. In the swellings and foldings noted upon the inner aspect of the anterior wall of the joint capsule, Dr Sack believes we see the remnant of the "plastic" connective tissue which originally had filled the whole site of the newly-formed joint. The acetabulum was found shallowed and filled largely by fat.—*Ibid.*

TWO HUNDRED HERNIOTOMIES.—Dr Habs (Magdeburg) has collected and tabulated 200 herniotomies done in Professor Hagedorn's clinique between 1883 and 1890. Thirteen operations were done in cases of reducible hernia, 17 in irreducible, with good results in all; 170 were done in strangulated hernia, with 29 deaths (17 per cent., or 14·5 per cent. of the whole number of cases). In only seven instances did death immediately follow the operation. Of 16 primary enterectomies 9 proved fatal, or 56·3 per cent.; only 2, however, as the result of operation —1 of bleeding, the other of peritonitis due to stitches. Enterectomies were not found to require longer hospital treatment than the other cases. In strangulated herniæ the mortality rose, first, with the age of the patient (5·6 per cent. at 20–30 years, 17·8 per cent. at 50–60, 57·1 at 70–80; and, second, the duration of the strangulation (after one day, 10 per cent. died; two days, 5 per cent.; three days, 10 per cent.; four days, 31 per cent.; seven days, 50 per cent.; eight days, 62 per cent.)—*Ibid.*

STITCHING THE BLADDER IN SUPRA-PUBIC LITHOTOMY.—Professor Guyon's practice is to close the lower third or even nearly half of the wound with No. 1 catgut, the stitches not entering the mucous coat; then to place two tubes in the bladder, and suture the upper part of the wound. Iodoform gauze is tucked in between the tubes and the pubis. On the fifth or sixth day—sometimes earlier, after two or three days—the tubes are removed, and the water drawn off by catheter for a few days. The urine, even though it should flow through the wound, does not delay its healing, and to trust to a complete suture of the bladder is to look for such a combination of happy conditions as cannot be counted on.—*Ann. des Malad. Organes Génito-Urinaires,* August 1891.

Part Fourth.

MEDICAL NEWS.

Graduation Ceremonial at Edinburgh University.—To meet the case of those Gentlemen who had not graduated on the Annual Commemoration Day, but had qualified since, a Graduation Ceremonial was held on the 14th October 1891, when the following received the degrees of M.B. and C.M.:—George Clark Catheart, Edinburgh; Francis T. Auden, Shrewsbury; Francis R. K. Ball, Edinburgh; Thomas W. Banks, Edinburgh; Edward A. Braithwaite, Cumberland; S. B. J. Buetell, Devon; P. G. Van der Byl, Cape Colony; Daniel Campbell, Dunvegan, Skye; J. A. H. Duncan, Inchture; H. C. Evison, Lancaster; R. S. Ferguson, Beamish; S. B. Figgis, Brighton; F. D. Fisher, Workington; George Fleming, Edinburgh; J. W. Forbes, Dundee; F. W. Foxcroft, Cheshire; D. C. Gardiner, Essex; H. C. Garth, London; W. E. Godber, Edinburgh; C. J. Gomes, Demerara; G. T. Gould, Newburgh; E. B. Gwynn, Shiffnal; H. P. Hannay, Leamington; W. B. Harry, Llanelly; M. K. Khan, Hyderabad, India; H. B. Knox, Kingston, Jamaica; W. L. Legg, Scarboro'; A. A. MacLeod, Greenock; Duncan M'Neill, Edinburgh; A. K. Melville, Edinburgh; C. A. Morgan, Flints; H. B. T. Morgan, Carnarvon; D. S. Morrison, Ardrishaig; E. R. Parry, Edinburgh; S. P. Peart, Edinburgh; J. L. Reed, Sydney, Australia; S. Riseley, Bristol; A. F. Rosa, Edinburgh; John Sharp, Boat of Garten; W. James, Lanark; F. A. Symons, Halifax, N.S.; F. M. Thomas, Liverpool; A. G. Thompson, Portobello; J. M. Thomson, Lasswade; J. T. Thyne, Edinburgh; H. Tibbits, Warwick; F. R. Turton, Edinburgh; J. C. Whyte, Edinburgh; E. S. Yonge, N. Devon.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

8 Crown Gardens, Dowanhill,
Glasgow, 25*th Sept.* 1891.

Dear Sir,—While acknowledging the appreciative reference to my paper on the "Development of the Intestine" made by Dr Ballantyne in the July number of your Journal, I beg leave to offer a correction of one of his statements.

Speaking of the abnormality described by me, Dr Ballantyne says (p. 53),—"In this case the loop of bowel descending from the neighbourhood of the duodenum to the left iliac crest was regarded as part of the ascending colon, and therefore, according to this view, there was no transverse colon at all." To this let me reply, that so far from considering the portion of bowel alluded to as part of the ascending colon, I looked upon it as part of the transverse; and necessarily so, seeing that I regarded the portion of the colon extending from the cæcum up to the point at which the intestine turned to the left as the part of the bowel from which, in ordinary circumstances, the ascending colon and the right half of the transverse would have been formed. I may add that I have explicitly stated (p. 84) that the coils of intestine lying in the left lumbar region, and passing up to the splenic flexure, were to be regarded as transverse colon.—Yours very truly,

R. Bruce Young.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

At the Annual Meeting of this College on 21st October, the following OFFICE-BEARERS were elected for the ensuing year :—

President.

Robert James Blair Cunynghame, M.D.

Vice-President.

John Duncan, LL.D.

Secretary and Treasurer.

Francis Cadell, M.B.

Librarian.

Charles Watson MacGillivray, M.D.

President's Council.

Henry Duncan Littlejohn, M.D.
Francis Brodie Imlach.
John Smith, M.D., LL.D.
Joseph Bell.
Douglas Argyll Robertson, M.D.
Alexander G. Miller.

Ex Officiis,—

John Duncan, Patrick Heron Watson, M.D., LL.D., Francis Cadell.

Representative in General Medical Council.

Patrick Heron Watson, M.D., LL.D.

Examiners.

John Struthers.
Henry Duncan Littlejohn.
Patrick Heron Watson.
John Smith.
D. Argyll Robertson.
Joseph Bell.
Thomas Annandale.
John Duncan.
Robert J. Blair Cunynghame.
Alexander G. Miller.
Peter H. Maclaren.
John Chiene.
James O. Affleck.
George Hunter.
James Dunsmure.
Charles E. Underhill.
James Ritchie.
William Craig.
Charles W. MacGillivray.
William A. Finlay.
Joseph M. Cotterill.
James Hunter.
Johnson Symington.
T. Duddingston Wilson.
Charles W. Cathcart.
Francis M. Caird.
Charles H. Thatcher.
George A. Berry.
J. W. B. Hodsdon.
J. Macdonald Brown.
R. M'Kenzie Johnston.
Robert H. Blaikie.
Robert A. Lundie.
J. Shaw Maclaren.
Stevenson Macadam.
J. Falconer King.
A. P. Aitken.

Public Health Examiners.

Henry Duncan Littlejohn.
Robert J. Blair Cunynghame.
William Craig.
George W. Balfour, M.D.
Stevenson Macadam, Ph.D.
A. P. Aitken, D.Sc.
Alexander Buchan, LL.D.
William Lees, M.A.

Dental Examiners.

Henry Duncan Littlejohn.
Patrick Heron Watson.
John Smith.
Joseph Bell.
Andrew Wilson, L.D.S.
George W. Watson, L.D.S.

Assessors.

Sir William Turner.
Francis B. Imlach.
D. Argyll Robertson.
James D. Gillespie, M.D.

Conservator of Museum.

Charles W. Cathcart, M.B.

Auditor.

George H. Carphin, C.A.

Clerk.

James Robertson, *Solicitor.*

Officer.

James Hamilton.

Assistant to Conservator.

George Reid.

Part First.

ORIGINAL COMMUNICATIONS.

I.—VALEDICTORY ADDRESS TO THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

By Professor A. R. SIMPSON, M.D., President.

GENTLEMEN,—On rising for the last time to address you from the Chair, it becomes me to offer you my hearty thanks for the kindness that placed me in this honourable position. Many men whose names Edinburgh will always cherish as the ornaments of our profession have filled the office, and its most ambitious member might well be proud to become President of the Medico-Chirurgical Society of Edinburgh. But I wish to thank you the more because I feel that in choosing me to be your President you not only conferred on me an honour, you at the same time bestowed on me a boon; for in laying on me the obligation to take the Chair at your meetings, you gave me the opportunity of hearing many important papers and discussions, and of seeing a variety of interesting patients and preparations illustrative of conditions with which I had little likelihood of becoming otherwise acquainted.

THE SOCIETY AN UNIVERSITAS OF MEDICINE.

In these days of rapidly-increasing specialism, when with the advance of every ancillary science the progress of our Art in its various departments makes it impossible for one to be proficient in each, there is a growing tendency for us to gather in our special groups, and so to concentrate attention on our individual subjects as to fall out of familiarity with all the rest. It is one of the happy and fruitful offices of this Society to call us from our divergent spheres, and gather us round themes of common interest to all. It is in its meetings that we get the clearest impression of the advances that are being made in the several directions along which Medicine progresses, and those who are working in one direction often get not only stimulus but guidance in listening to the reports of those who are working in another.

As an illustration I may refer to the practice of flap-splitting in the repair of injuries of the perineum. As is well known, the wide acceptance of this procedure is largely due to the genius and energy of a gynecologist, of whose great achievements Edinburgh must be ever proud—I mean Professor Lawson Tait of Birmingham. But some of our co-workers, especially in Germany, were led to adopt it from the description given of the operation in Hart and Barbour's widely-circulated *Manual of Gynecology;* and what I wish to indicate just now is, that it was from hearing in this Society a paper by Dr Joseph Bell in 1876, in which he described the successful closure of the pudenda in a distressing case of vesico-vaginal fistula, that it occurred to me that perineal damages might all be repaired by simply dissecting up flaps of mucous membrane to secure sufficient raw surface for re-union, instead of paring away the superficial tissues, as had been the practice previously. Mr Bell told us, in the subsequent discussion, that he had probably got the idea from a statement by Dr John Duncan, at some previous meeting, that he had adopted the principle in operating for the cure of artificial anus. It is thus that one mind stimulates another, and the success that has been achieved in one direction leads to good results in others also.

I.—Comprehensiveness shown in the Presidential Succession.

From three different points of view the comprehensive character of the Society impresses itself on one. *First,* that in succession to a Dentist, who had been preceded by a pure Physician, you chose an Obstetrician for your President, and that he in turn should be succeeded by a member who has won his laurels in the domain of Surgery—that, surely, is a very striking evidence of the wide variety of interests that are represented here.

II.—The Death-Roll.

Again, when we scan the death-roll of the last two years, we are struck by the same note of comprehensiveness. From the list of our Foreign Corresponding Members there have fallen the names of Jacob Bigelow, the illustrious Professor of Surgery in Harvard University, Boston, and of Fordyce Barker, of New York, who, if he had not been the foremost Obstetrician in America, would have been placed in the very front rank of her Physicians, and on whom not only the colleges of his own country but the two leading universities of Scotland delighted to confer their honorary degree of LL.D. Of Corresponding Members in the United Kingdom, we have lost Sir William Gull, foremost among the London Physicians of his day; Professor John Marshall, the Surgeon who presided with so much dignity and distinction over the affairs of the General Medical Council; and a great Obstetrician in the person of Dr James Matthews Duncan. This last name comes closest to us here, and the mention of it now touches in many hearts tender chords of admiration and affection. My first memory of Dr Duncan goes back to a school vacation when he gave my brother and me lessons in rowing on the Holy Loch; and my next to a visit he paid to Bathgate, along with Dr Thomas Keith, to report the results of operations which my uncle had been out the week before performing on some pigs in my father's premises. What made that visit specially memorable was that, on the way out to see our famous Academy, a game of leap frog was started on the road-side, and for once in my life I had the delight of clearing a back high enough, and shoulders broad enough, to satisfy the vaulting ambition of any school-boy. That must have been in 1849. When I came to Edinburgh as a student in 1850, Duncan still kept coming to 52 Queen Street to consult books in the library; but already a coolness had set in between him and his "chief" that settled into an estrangement, which was, I fancy, a life-long sorrow for them both. They were men of very diverse temperament—differing from each other as does the eager, heaven-searching Greek from the determined, earth-subduing Roman. But they were both of them splendid workers; and, happily for us, the work of each abides. It was in this Society that Matthews Duncan communicated to the profession many of his most valuable researches. For years he took a prominent part in its debates; as a Member of Council and a Vice-President he took his share in the management of its affairs; and on his removal to London, the Society expressed its high appreciation of his worth by enrolling him in the honoured list of its Corresponding Members. His memory will long be cherished among us, and for many generations the treatises on Midwifery will make mention of his name.

The losses from among our Ordinary Members still illustrate the variety of minds that are wont to assemble here. Dr William Menzies for more than half a century conducted one of the most extensive practices that has almost ever fallen to the lot of any Edinburgh doctor. "I've been three times out of my bed this week at confinement cases, and I have sixty visits to pay to-day," he would say to one who wished to detain him of a morning; and off he would go from street to street and stair to stair, never hasting, never resting, carrying confidence and comfort into many a home. That he was able to a green old age to go through such unremitting toil he attributed to the practice—which he had adopted in early life—of total abstinence from all intoxicants; and I do not doubt that he was right. Dr James Struthers was endowed with gifts that would have ensured him a high place among the specialists if he had not devoted himself to the work of a general practitioner. As it was, he rose to a position of eminence, and those who had occasion to meet him were not surprised at the confidence with which he inspired his patients when they saw the zest with which he continued to study diseases not only in their practical but their scientific aspects. It was with a generous and characteristic self-effacement that in his will he bequeathed to the Royal College of Physicians £1000, the interest of which should go, not to perpetuate his own memory, but to increase the value of a prize that bears another Fellow's name. Dr Robert Bruce was also a practitioner of wide experience, who sometimes gave the benefit of his observations to our Societies, especially when the discussions turned on the diseases of infants. Dr William Ziegler, who was for many years in succession to his father one of the Physicians to the Maternity Hospital, did good work in connexion with that Institution. Though of delicate frame, he lived an active life, and added honour to a name already honoured in Obstetrics. Dr William Wilson had not long graduated, and had just begun a career of high promise in assisting his father as a dentist, when he was taken away. Besides these five Ordinary Members, four have died who were not resident in Edinburgh, viz., Dr Andrew Graham, Fleet Surgeon, R.N.; Dr Peter Gordon, of Juniper Green; Dr Thomas Sheriff; and Dr Walter Weir, of London.

III.—Diversity of Contributors to Transactions.

The diversity of pursuit of your successive Presidents, and the varied associations that gather round the names of our departed brethren, alike declare our Society to be a kind of Universitas of Medicine. But, *thirdly*, the wide range of its interests comes still more clearly into view when we glance at the names of those who have contributed papers to our Transactions, or exhibited patients, preparations and specimens, or taken part in our debates. Surgery is represented by Professor Annandale, Messrs Caird and Cathcart, Professor Chiene, Messrs Kenneth Douglas, Duncan, Scott Lang, Shaw Maclaren, Miles, Miller, Alexis Thomson, and Wallace; Medicine, by Drs Affleck, Brakenridge, Bramwell, Felkin, James, Philip, A. Smart, and Professor Grainger Stewart; Pathology, by Drs Barrett and Bruce, Professor Greenfield and Dr Russell; Psychiatrics, by Dr Clouston; Gynecology, by Drs Ballantyne, Brewis, Halliday Croom and Berry Hart; Pædiatrics, by Drs Carmichael, Playfair and John Thomson; Dermatology, by Dr Allan Jamieson; Ophthalmology, by Messrs Berry and W. G. Sym; Otology, by Drs Horsley and M'Bride; Dentistry, by Dr John Smith; Public Health, by Dr Littlejohn and Dr Harvey Littlejohn; Anatomy and Physiology, by Dr Haycraft and Mr Hughes: whilst of our Resident Members engaged in general practice, Drs J. M. Balfour, Boddie, Edie, Gulland, Kennedy, Lundie, Burn Murdoch, James Ritchie, Ronaldson, Shand, Alan Sym, Taylor and Troup, and of our Non-resident Members, Dr Andrew Balfour of Portobello, Dr Bedford of the Bengal Medical Service, Dr Begg of Hankow, Dr Leslie of Falkirk and, last in this alphabetical list though not least in the importance of his communication, Dr Strachan of Dollar have all contributed in various ways to increase the value of our two volumes of Transactions.

THREE OUTSTANDING MEETINGS.

It were too long to attempt even to enumerate the subjects that have been brought before us by these gentlemen during the last two years. But three of our meetings were specially well attended because of the wide interest attaching to the topics that were brought forward for discussion, and deserve to be recalled on this occasion.

I. THE PHYSIOLOGY OF EDUCATION.

The relation of school work to the health of children was brought before us in a very thoughtful and suggestive address by Dr Strachan of Dollar, who was well able to deal with the subject from his long observation of the health conditions of young people in that seat of education. Besides the observations that were made by our own members, the subject was further discussed by several of the leading educationalists of Edinburgh, with whose presence we were favoured on that occasion. The interest that the matter evoked was shown not only by the large attendance and the fullness of debate, but by the reports of the proceedings that appeared in the daily newspapers. And, indeed, there are few subjects more worthy of close consideration than the physiological conditions under which the education of the young can be best carried out. The function of the school and the college has been all too much confined to the training of the mental faculties of the young, whilst their physical training has been left to chance, which is often a mischance. Happily there is in childhood and youth a buoyancy of life that leads to an amount of spontaneous exertion tending to the full development of the physical frame, and especially of the muscular powers. But where there is no proper regulation of exercise, it is apt, on the one hand, to be insufficiently carried out by the indolent or by those who have restricted opportunities, and, on the other, to be overdriven by the eager or by those who are urged on through unhealthy emulation. In this way there are some who never have enough of exercise to ensure their full development; whilst there are others who are damaged by the too great strain that is put upon them in their games. They manage these things better in Germany. But it does not need the pressure of a paternal government to secure a wholesome system of exercise for the young. In this respect Republican America is far ahead of us, and in some of its schools and colleges a system of physical training has been set up which is almost ideally perfect.

I have on more than one occasion referred to the admirable gymnasium gifted to the College of Amherst, Connecticut, by Mr C. M. Pratt of Brooklyn, one of its old alumni. It impressed me more than anything I saw in America, and it was the one thing in all the New World that I felt disposed to covet. The ample building for compulsory and voluntary gymnastic exercise is erected in the College campus in close proximity to the various halls, class-rooms and residences, and besides containing a great hall well stocked with all variety of apparatus for exercise of every kind, it is provided with abundant appliances of shower, sponge, and plunge baths, with hot and cold water, and dressing-rooms containing lockers for the reception of the gymnastic suit, as well as providing for its drying and airing after exercise, and for ventilation of sponge and towel. Professor Hitchcock, who has charge of the department, many years ago instituted a careful series of anthropometric observations which have been applied to all the men who enter the college. Each student when he first comes up is subjected to a very complete scrutiny, and has entered for him on his card his height, weight, strength, lung capacity, and many measurements of head, neck, trunk, and limbs, as to length and girth of various parts, as well as observations on the condition of his eyes, ears, heart, lungs, and muscles. For from his thirty years' records Dr Hitchcock has been able to construct tables which will show the student at a glance how he stands compared with the average of his own age or height. The Professor, it may be remarked in passing, is in this way accumulating a large series of valuable data, which may give more correct impressions as to the characteristics of a typical man than are to be obtained from the measurements made of soldiers, sailors, prisoners, and other groups from whom measurements have been taken usually under government requirements.

When the department was first established in Amherst, it was a question with the authorities whether compulsory physical exercise would be maintained, but experience soon taught them that properly managed physical exercises could be as well made compulsory as any other college duties, and in the afternoon or early evening, after the work of the various classes is over, the men of each year have to go as regularly to the drill-hall as they have gone to their various classes. The idea of physical culture, as Dr Hitchcock indicates, has too often been that great muscular development is the only essential element in it; but he thinks that in order to keep the students in the best condition for work, it is demanded that the muscles be not trained to their fullest powers. He holds before him as a model, not a Hercules, but "rather the Apollo with such physical development as shall be the fittest receptacle for bodily and mental strength and grace." "Physical culture," he says in another pamphlet, "as expressed to Amherst College students, means something besides, something in addition to muscular exercise. It includes cleanliness of skin, attention to stomach and bowels, relaxation from daily mental work, freedom from certain kinds of petty discipline, but with so much requirement and restraint as will give coherence, respect, and stability to the methods of maintaining health and the men employing them. The way in which students here are called upon to secure health and its correct and normal maintenance for college requirements, is to be sure of some active, lively, and vigorous muscular exercise at stated periods; not requiring a rigid military or hardening drill of certain parts of the body, but offering them such exercises as shall, while regularly obtained, be vigorous, pleasant, recreative, and at the same time, even without a manifest consciousness of it, be calling into play their powers in active, vigorous, easy, and graceful movements. Light wooden dumbbells, weighing about one pound each, are placed in the hand, and then a series of movements are directed and timed by music, occupying in all from twenty to thirty minutes each day, which are simultaneously performed by a whole class under the lead of the captain. . . . . The young men at the close of one of these exercises, with the temperature at 60°, have usually secured moisture on the skin, are breathing fully and deeply, the blood circulates, the abdominal viscera are sufficiently stimulated, and their muscles are limber and elastic, they have gained good exercise, and the whole man has the feeling that he has worked in a physical way, and yet is not exhausted. The whole body in the loose and easy uniform, unconstrained by a rigid piece of apparatus, is given a freedom of action which cannot be acquired by the stolid march or the constraint of any fixed or many kinds of movable gymnastic apparatus; and, lastly, the students generally feel, with all, that they have had a good time. And the mental and social freedom allowed and encouraged in these exercises conduces to the rapid and healthful evaporation of superfluous animal spirits, generated by the physical and mental confinement of study."

I found it an interesting spectacle to watch a hundred young fellows carried through the various evolutions of their half-hour's drill, and one can readily understand that the effect of such systematic healthful discipline is to reduce the morbidity among the men to quite an appreciable degree. Instead of their declining in health with their successive years of college work, it is found that their proclivity to sickness lessens. Their sickness record of a quarter of a century shows that while the percentage of sick in the first or Freshman Class is 23·5, it is only 18·3 in the fourth or Senior Class, giving a decrease of more than 5 per cent. in the morbidity from Freshman to Senior years.

I have spoken of the physical culture as it is carried out in Amherst College, because I had the good fortune to see it in happy operation there, and I then received such a strong impression of its value in developing the whole man harmoniously, that I felt that if ever I were under the necessity of sending a son from home to receive a college education, it would be to Amherst he should go, to share in the benefits of systematized intellectual and physical training. But many others of the best colleges in America have introduced systematic physical exercises as a part of the regular curriculum, and spend money freely upon buildings devoted to this purpose. Their example is being widely followed in the schools, and a demand has arisen for educated men and women to act as teachers in this department. It has been recognised that the training should be carefully graded and pursued upon a regular system, and that it is of vital importance that children and growing boys and girls should come in contact, in the gymnasium, with teachers who are as refined and competent to teach as instructors in other branches. In Brooklyn, an association exists for the advancement of Physical Education; and a Normal School for the training of teachers in this important department has been established. "Fifty years hence," they say, "it will seem strange that what was deemed by the ancients indispensable to a complete education should have waited until the nineteenth century for general recognition in our modern educational curriculum." The dilettante calisthenics or the rude rivalries of the football field, with all the ill-regulated efforts and intermediate forms of athletics that take the place of physical training among us, make one fear that the nineteenth century will be gone before British schools and colleges have wakened up to recognise the importance of aiming at the healthy upbringing of the young by making due provision for their bodily as well as their mental discipline. But it gives some ground of hope for progress, that in this Society the matter should, once at least, have been taken up and subjected to free discussion.

II. INFLUENZA.

Another evening—the evening of March 5th, 1890—was devoted to a discussion on Influenza. Little wonder. The presence of that mysterious malady was making itself known in many ways. It raised the mortality to an unusual height,—the general mortality in our city reaching one week the unprecedently high rate, as Dr Littlejohn told us, of 32 per 1000. When I went to York Buildings to register the birth of a boy on January 16th, my old friend Mr Adam greeted me with a very sad countenance, till I asked him for a birth certificate, when he brightened up, saying, "Oh, I'm glad to hear that's what you want. There have been so many deaths this week, I was afraid you were coming in for a death certificate." Apart from the increased mortality, the disease made itself uncomfortably familiar from the wide range of its attack and its tendency to recur. Its victims had many diverse forms of suffering; those who had it, even in the milder forms, were conscious often of prolonged enfeeblement; and throughout the community at large there was an unusual degree of depression of the nervous system. The discussion was opened by Dr Brakenridge in a paper which will be of permanent value as giving a very clear account of the course of the epidemic of 1890, and a careful record of its distinctive characters; and Dr Buchan, the distinguished meteorologist, added to the interest of the evening by giving us some observations as to the meteorological conditions that prevailed, and the influence of cyclonic and anti-cyclonic currents in diffusing atoms through wide areas. But I think we owe it to ourselves to confess, that in dealing with this disease we are in the face of problems still waiting their solution. It is quite in the present line of the march of Medicine to regard it as of microbial origin. We were not therefore surprised to hear that an Austrian had claimed to have discovered the influenza germ; but the confirmation we waited for has never come. No one has yet got sight of a micro-organism that can be regarded as the propagative agent in the development of influenza, much less has its geographical habitat been recognised, or the seat of its operations in the human frame, or the conditions of its multiplication and diffusion. If we do not confess our ignorance to ourselves, the laity will do it for us. Says a daily newspaper:—"We have had two winters of influenza, and now we are threatened with a third. All our doctors have had patients suffering from the malady, and a good many of them have had the disease themselves. It has attacked all ranks, ages, temperaments, and localities; and steady family physicians, whose knowledge dates back to the great attack in '48, and inexperienced young practitioners with faith in their own skill and their patients' strength, have alike sought to grapple with it. There has been every variety of patient, every variety of treatment, every variety of environment, with (we now want very much to know) what general result. Certain drugs heretofore believed in must have been proved wholly ineffectual, others lately tested for the first time may have shown themselves useful or dangerous, or doubtful. Probably the disease is on us again, and are all our experiments and experiences to go for nothing? Is the mind of the ordinary practitioner—say of the dispensary doctor in some remote country district—to remain like Locke's 'sheet of blank paper?' We want—the public, at all events, if not the profession—some definite information, some guiding, some help. There are printed instructions in theatres of what should be done in case of fire. We want some such authentic advice in case of influenza."

Now while the demand in the close of this paragraph is well met by the admirable rules regarding the treatment laid down by Dr Brakenridge in his communication, the general drift of the remarks is justified by the scanty knowledge we have yet attained of the essence of the malady. We of this generation were hardly prepared to believe that an epidemic of influenza could have such a powerful effect on the morbidity and mortality of a community. We had been wont to use the name in rather airy fashion, sometimes to impress on some one with a slight catarrh the need of taking care; sometimes to mitigate the alarm of some others who feared they were in for graver mischief. I am old enough to remember the great debates that used to take place in this Society and city as to the efficacy or inefficacy, and worse, of bloodletting in the treatment of disease. My sympathies were with Dr Bennett when he maintained that the practice had been always futile, and the abandonment of it due to change of pathological view on the part of the profession rather than to change in the constitution of their patients. But after what we have seen these last two years, I am not so sure that the philosophic Laycock had not some good ground for maintaining that influenza epidemics which preceded the change in practice had produced an abiding effect on the human system, such as to render it less tolerant of the bleedings that had been so freely had recourse to in earlier times. However this may be, we have, in the return of this mysterious visitant in such impressive form in our generation, a challenge to grapple with the mischief. Especially it calls on the men familiar with the newer methods of observation and research, to set themselves determinedly to discover its secret, to track it to its source, and to devise the means to check its ravages. If some of our younger members will but rise to the occasion, we shall have another influenza evening that will have more definite issues and shed a clearer light upon the problems that it sets before us.

III. Tuberculin and the Cancer Microbe.

The third occasion on which we had a crowded attendance was on 3rd December 1890, when it had been announced in the billet that Dr Philip would give his "Personal Impressions of Koch's Treatment at Berlin, with Early Notes of Cases treated in the Royal Infirmary of Edinburgh," and that Dr Russell was to read a paper "On a Characteristic Organism of Cancer."

Koch's Treatment—Expectation and Disappointment.

The whole civilized world was in a ferment of expectation because it had been proclaimed that one of the ablest bacteriologists of the day had succeeded in producing a cultivation fluid that was likely to be able to stay the progress of consumption. The very possibility that such a discovery had been made might well thrill the most indifferent and stir the dullest imagination. For to cure consumption would be to free mankind from one of the most widespread, most remorseless and deadliest of diseases. Further experience has utterly disappointed the too exalted expectations that were at first aroused, but some of our most trusted clinicians tell us they still get favourable results from the injections of tuberculin in selected cases. Koch himself, as well as Dr William Hunter and others, continue to make investigations into the composition and modes of preparation of the liquid that may lead to elimination of some of the dangers attendant on its use; and the very fact that for a moment a vista of light seemed to open in the gloom will serve to stimulate to efforts in that direction that in the end must insure beneficent results. Meantime, we have been taught the danger of having the hand of a scientific worker forced by imperial behest, and the eagerness with which the remedy was so widely demanded by the profession, and the zeal with which it was at once put to the proof, ought to show the laity that the medical mind is not so inhospitable to new and unproved modes of treatment as it is too often alleged to be. It is to be hoped it will never deign to dabble in solutions of blue and green electricity. It must be excused from listening to the clamours of those characters that prey upon the sufferings of men, however abundant may be their alleged cures, who choose to keep their nostrum secret, or vaunt a remedy that outrages our reason. But it longs as earnestly to be able to cure, as the sick for whom it cares long to be cured; it accepts with eagerness an entirely new method of treatment when it comes with the authority of a man whose previous career Professor Gairdner could describe "as an admirable lesson in patient and cautious, as well as brilliant research and discovery;" and even when its expectation is disappointed it does not despair, but cheers the worker on to further and more fruitful effort.

A Cancer Micro-organism?

If there is any disease more universally dreaded than consumption it is cancer. To be sure it does not, like consumption, smite down remorselessly the young and promising, but those who are seized in its relentless grasp find themselves shut up in a more hopeless gloom. If consumption could be cured, or other diseases shorn of their mortality, the more numerous would become the victims of this fell disease. It was, therefore, with the greatest interest that on the same evening on which the new remedy for consumption was discussed that the Society listened to a paper by one of our esteemed Secretaries, in which he sought to demonstrate the existence in cancerous tissue of a fungus which should be characteristic of cancer, and the cause of its development. The paper was the outcome of long and elaborate research, and though in the subsequent discussion the opinions that were expressed were mostly adverse to the acceptance of Dr Russell's conclusions—as, indeed, it is very doubtful whether cancer be of microbial origin at all—yet the communication is valuable if for nothing else than for the stimulus it gives to further investigation into the intimate nature of this variety of neoplasm. Every generation finds its crop of cancer-curers springing up; but, though sometimes remedies can be successfully applied to diseases of which the pathology is still unsettled, it is in the patient research into the exact nature of any disease that our best hope lies of learning how to check its spread, or, better still, to guard against its onset.

The Microbial Era in Medicine.

At different epochs Medicine has made rapid strides in its progress under the dominance of some prevalent idea. In the middle of this century, the idea that the unit of life was to be found in the cell prevailed, and led to the development of cellular pathology. In these later years the idea that many forms of disease are due to the action of micro-organisms prevails, and the close of the nineteenth century will be always remembered as the era of micro-biology in Medicine. The first volume has just appeared of a great *Traité de Médecine*, which is to extend to six volumes, written by a score of the younger physicians of France, and edited by Brissaud under the direction of Charcot and Bouchard. It begins with an extensive treatise by Charrin on *Pathologie Générale Infectieuse*, and thus gives micro-biology the very first place in medical study. What the issue will be of all the work that is being done under the stimulus of this idea it is hard to foretell. Whilst at this moment it looks, to us, as if the microbes were the all-important elements to be observed in diseases and their treatment, it may be that in a further stage we shall have to concern ourselves more with the chemical products that are found along with them, or with the conditions that admit of their entrance into the system. In any case it is the bounden duty of any society, or school, or city, that wants to keep in the vanguard of Medicine, to bend itself to strenuous work on the micro-biological problems of the day, and to encourage and foster by every means the talent for bacteriological research.

Edinburgh has not hung back altogether in the march. Professor Chiene, *e.g.*, has nobly striven to develop this department in the surgical laboratory of the University. But I have a misgiving that we have not done all that might have been expected of us; and it is perhaps to be regretted that our men who wish to be fully trained in this kind of research, or who have set themselves to the solution of some of its problems, have to make their way to the Pasteur Institute at Paris, or the Bacteriological Department of some German university, in order to find the proper opportunity. We can, of course, excuse ourselves, because of the much other work we have to do, and because of the inaccessibility of a governmental purse from which the necessary provision can be obtained. But we might do better to cast about and see whether we could not do something even now that would be worthy of our good name. The medical and surgical corporations and societies might combine, and doubtless they would be backed by contributions from individual members, to promote the establishment of a Bacteriological Institute. Or the College of Physicians itself might undertake the enterprise. It would only be adding to the good service it already rendered to the profession in establishing, as it did a few years ago at the initiative of Dr Batty Tuke, the Pathological Institute in Lauriston Lane, in which already so much valuable work has been produced.

VALETE!

Gentlemen, it was at one time in my mind to have spoken to you on this occasion of great men and great doings in the past of the Society. The glance at the Transactions of the past two years has led instead to this brief outlook into the future; and whilst emulation might have been stirred by study of what had been done by those who were before us in the field, it may be that a better stimulus to work will have been given by thinking of what is waiting still for us in our own day to do. We have here a happy meeting ground where the workmen from different corners gather to compare results, and it is a pleasure to reflect that in Dr Joseph Bell you will have a President who not only is a celebrated Surgeon, but who, through his long connexion with our Medical Journal, has kept himself acquainted with what is being done in many quarters, and is therefore singularly well qualified to preside over our wide-ranging deliberations.

I said that I owed you thanks, both for the honour of being called to the chair, and for the opportunities presented to me of listening to your debates. Let me thank you further for the occasion you have offered me to form and foster friendships among my fellow office-bearers. To one of a not very clubbable disposition, and consciously defective in social qualities, such occasion has been very precious; and I leave this platform at once honoured in having been your President, enlightened in many ways through your Transactions, and enriched in life with what makes life truly rich, the friendship of good men. It is, therefore, with something of real affection, as well as with heartfelt gratitude, that I say to you now Farewell.

II.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P.E., Lecturer on Medicine in the Edinburgh School; one of the Ordinary Physicians to the Royal Infirmary, Edinburgh.

(*Continued from page* 421.)

PART I.—THE FUNCTIONAL DISORDERS OF THE VOCAL MECHANISM —*Continued.*

3. *The Troubles of Professional Voice-users; with Appendix as to Writer's Cramp.*

IN this, the third paper of our series, we propose to consider the disturbances of phonation that are most apt to appear among those who require, in the daily business of life, to use their voices professionally. Preachers, lecturers, teachers, advocates, officers, singers, actors, auctioneers, and costermongers are examples of persons who follow such occupations; and the list might be greatly enlarged. People in general use their vocal organs, in speech and occasionally in song, in their daily life; but there is an important difference between the speech or song of private life and the speech or song required in a public oration or vocal performance.

The public performances put a strain upon the vocal organs that they are seldom subjected to in the course of private life. Under strain these may break down. In this paper, an attempt will be made to describe the various ways in which a break-down may occur; to explain the curative measures that may be used in the treatment of such cases; and to give some rules for the general management and hygiene of the vocal organs.

The systematic study of the troubles of professional voice-users has of late years been pursued by a number of good observers. But, although much progress has been made, it cannot be said that scientific knowledge regarding such affections is yet in a very advanced condition. Much, however, that is important has been learned; and the subject is well worthy of careful study, seeing that so many persons, in all civilized communities, depend upon the voice for a livelihood. In such persons, a break down of the vocal organs may be most disastrous to themselves and their families.

Points in the Physiology of Voice Production.

By way of preface, the reader may be reminded of a few physiological points that bear upon the subject.

Briefly, it may be said that song differs from speech in that it contains Music as its predominant element; but that it resembles speech in that it gives articulate expression to thought in words. Public speaking occupies, in this respect, an intermediate position between song and ordinary speech. It contains less music than song, but more than ordinary speech, since its tones must be fuller, rounder, and louder, if they are meant to travel to a distance. Dr John Hullah, in referring to the necessity for musical utterance in public speech, street cries, etc., makes, in his admirable little book on the *Speaking Voice*, the following remarks:—"The first person who ever attempted to address a very large assembly must have discovered, by the time he had uttered a dozen words, that, if what he had to say was to be made not only audible but intelligible, to any but those immediately about him, his utterance must be partially musical; and that the more numerous his audience, and the larger his auditorium, the more musical must that utterance be. . . . . . Every factory, every ship, and (more familiar instance) every street, will furnish us with examples of *accentus* and even *concentus*, of partially or even of perfectly musical utterance." Of course the musical element in public speaking may be overdone: it is only the good public speaker who will be able to supply it abundantly in his tones without allowing them to assume the characters of "sing-song" or of monotonous intonation.

Dr Hullah also very neatly describes the differences between the varying Pitch and Intonation of speech and those of song. "In speech," he says, "the voice glides up and down what, by an allowable figure, may be called an inclined plane; in song it makes steps, the proportions of which to one another are ascertained.

. . . . . The variations of pitch in speech may be compared to the effect produced by sliding the finger up and down a vibrating string; those in song to that produced by stopping such a string at certain intervals and at no others." He further shows that the range of pitch in the gliding tones of speech is small, being confined, as a rule, to the musical interval of one-fourth, whereas the range of pitch in song is, of course, very much more extensive.

The Carrying or Travelling power of speech depends almost entirely upon the predominance of its vocal element. A shout would be no shout without an emphatic production of voice, and a public speaker will be well heard in a large hall only when he makes a sonorous use of his voice in speaking. We find, in like manner, that the letters of the Physiological Alphabet which carry best to a distance are those which contain most of the vocal element in their composition. Thus the vowels carry best of all; next them the nasal resonants; next these the voiced fricatives; next these the voiced explosives; and after these the voiceless explosives and fricatives, which carry worst of all. Helmholtz has made some remarks upon this subject. He says, "It is interesting in calm weather to listen to the voices of men who are descending from high hills to the plains. Words can no longer be recognised, or at most such as are composed of **m**, **n**, and vowels, as 'Mama,' 'no.' But the vowels contained in the spoken words are easily distinguished. They form a strange series of alterations of quality and singular inflexions of tone, wanting the thread which connects them into words and sentences."[1] Sitting in my room late one night, when working at this subject, I listened to a singer with a good voice, as he passed along the street on his way home. When he was under my window, I could make out distinctly every word of his song, but he immediately turned a corner of the street, and the words became unintelligible, most of the consonants having been lost on the way to my ear. Still, for some time, I could distinctly make out the vowels in the words he was singing; until, when he was farther in the distance, the vowels reached my ear shorn of the harmonics to which they owe their specific characters, so that I could no longer distinguish one vowel from another. Yet the fundamental note, with its pitch derived from the larynx, enabled me to follow the melody until it finally died away.

Musicians tell us that the four chief properties of voice are, Intensity, Compass, Flexibility, and Timbre; and that the last of these, which may be translated "quality," is the most essential of all, if the voice is to give pleasure in song. Training has great power in enhancing all of these, especially when Nature has provided an originally good organ, and a good musical ear. By training, the Intensity or Power of the voice may be increased; the energy of the muscles of the chest and larynx being increased by daily and systematic exercise. In like manner, training can increase the Flexibility and the Compass of the voice. Above all, training can communicate to the voice a precision in attacking musical notes that is seldom or never met with in the singing of an untrained musician. In the trained singer, the moment the air begins to act upon the vocal cords the note is emitted in perfectly correct tune, and sometimes, when desirable, with a sudden explosive effect, which has been called the "shock of the glottis," or "Coup de Glotte." This "shock of the glottis" is a subject about which much has been written by Mandl,[1] Lunn,[2] Lennox-Browne and Behnke,[3] and others who have written upon voice-production. The manner in which training communicates this precision to the vocal organs is a subject worthy of very careful consideration, although in this paper only a few words can be said about it. We must remember that singing is, after all, the result of muscular action, carried on in obedience to impulses proceeding from certain cerebral nerve centres. It seems to me that more attention might, with advantage, be paid to the action of these centres. Writers upon the voice fully recognise the influence of training in strengthening the muscles, and in making them prompt to obey influences proceeding from the nerve centres; but perhaps they do not sufficiently recognise that its influence upon the Nerve Centres is more important still, inasmuch as the power of directing any finely co-ordinated muscular act can be acquired by such centres only after careful practice. That it is acquired, is apparently due, not only to the fact that the frequent repetition of the act habituates the nerve-cells to the discharge, and the nerve-fibres to the conduction of the nerve-force required, but also to the fact that the muscular sense and the other senses excited by the performance of the act engrave, in the regulating centres, a perfect motor picture of the act,—this picture being copied and imprinted afresh each time the act is repeated.[4] This view helps us to understand the long and laborious training necessary for the development of a fine singer. The training has been exercising, not only his muscles and nerves, but also his nerve-centres, which have been acquiring motor memories or pictures, so well defined, that, by force of habit, they can be utilized in the production of song, without any strain of attention on the part of the singer using them.

---

[1] Helmholtz, *Sensations of Tone*, p. 111.

---

[1] *Hygiène de la Voix*, par le Dr L. Mandl, 1876.

[2] The *Philosophy of Voice*, by Charles Lunn, 1874. After the publication of my paper in 1866, Mr Lunn was one of the first to recognise that the valve-actions described in it are important functions of the Larynx. Unfortunately his consideration of the subject led him to think that the false cords and ventricles of Morgagni are concerned in the production of the "Shock of the Glottis." This I think is a mistake. I believe that the Ventricles of Morgagni have little or nothing to do with the function of voice. During phonation the false cords are widely separated, and the Ventricles of Morgagni are, I believe, collapsed and empty. I admit, however, that it is difficult or impossible to prove that the ventricles are collapsed. The "Shock of the Glottis," I believe, owes its almost explosive character to the force and precision given by training to the muscles that are called into play. The note is struck at once, in perfect tune, and it may be struck with great power: "as," says Dr Hullah, "the sound of the violin reaches the ear the instant the bow of the skilful violinist touches the string, so should that of the voice at the instant expiration—the bowing of the violinist—begins."

[3] *Voice, Song, and Speech*. 1883.

[4] The formation of such motor memories or pictures of co-ordinated movements is discussed by M. Victor Horsley in a very interesting manner in one of his recent papers.

The Timbre or Quality of the voice probably depends more upon the condition and management of the Pharynx, and other accessory parts such as the Oral cavity, than upon the condition or management of the larynx itself. Any disease or derangement of the Pharynx is apt to tell injuriously upon the quality of the voice. It will be well, however, to reserve the discussion of the vocal relationships of the Pharynx until we come to consider an affection of that part which is of common occurrence in public speakers, viz., Follicular Pharyngitis, the producer of Dysphonia Clericorum, or Clergyman's sore throat.

Meantime, let us consider those troubles of professional voice-users that are more immediately connected with the functions of the Larynx itself.

Laryngeal Troubles in Professional Voice-users.

A. *Reference to the effects of ordinary Laryngeal Disorders.*—Like other people, those who use the voice professionally are apt to suffer from Laryngeal Catarrh, an affection which produces hoarseness as one of its symptoms. This affection is specially serious to the professional voice-user, because it disables him more or less for professional work, and because, if he continue such work while suffering from it, the inflammation may be aggravated, and its duration prolonged indefinitely. The catarrh may even be originally excited by over-straining of the Larynx, as in costermongers or others who have to shout a great deal. So, in like manner, Nervous causes of disablement, such as the Hysterical, Neurasthenic, or Toxic conditions enumerated in the last paper, may affect speakers and singers, just as they affect others, and may be specially important in them only because of the special importance to them of the organ affected. Further, the larynx of a professional voice-user may be disabled by any one of the many varieties of Organic disease, such as tubercular or specific disease, or new growths. All that need be here said about these diseases is that a very slight organic change, such as might be of little importance to those who do not use their voice professionally, is often disastrous to the professional voice-user, and more especially to the professional singer. Although slight, it may be sufficient to destroy the purity of his vocal tones.

B. *Fatigue Neuroses of the Larynx.*—These and the other Neuroses of the Larynx will be found described, with special fulness and care, by Gottstein, in his work on *Diseases of the Larynx*.[1] One of the other contributions to the subject is a very interesting paper by Professor B. Fränkel of Berlin.[2] As Fränkel's paper describes the three leading forms of Fatigue Neurosis with admirable clearness, I shall begin my account of the Fatigue Neuroses by giving a summary of its contents.

Taking writer's cramp of the hand as the most typical example of a Professional Fatigue Neurosis, Fränkel reminds his readers that that affection occurs in three different forms, viz., (1) the Spasmodic, (2) the Tremulous, and (3) the Paralytic. Comparing these varieties of writer's cramp with the Fatigue Neuroses of the Larynx that are met with in professional voice-users, he finds all three varieties represented.

Thus the Spasmodic Variety is represented by cases of Phonetic Spasm of the Glottis, many of which have already been put on record by observers on the Continent and in this country. The leading characteristic of this variety is the sudden Stop, during public speech or song, from involuntary closure of the glottis. This closure may be complete; and then the patient emits no sound, although he may move his lips as if still speaking, and may give evidence, in his expression and congested face, of making a great effort. On the other hand, the closure may be incomplete; and then, in his efforts to speak, the patient emits sounds of suppressed vocal character, such as are so often produced in other conditions of straining. Fränkel makes no attempt to describe the appearances presented by the larynx during such involuntary closure. Other writers, however, who have recorded cases, have attempted to describe the appearances on laryngoscopic examination. They say that the true cords are seen to be in the closest apposition throughout their whole length; and this they consider to be the cause of the obstruction. I venture to express the strongest doubt as to the accuracy of this observation. I have already, in the first paper, referred to the valvular closure of the false cords over the true, during any effort of straining; and I may here add that, in the investigation already referred to, I proved that the construction of the True cords is such as makes them as badly fitted as they could possibly be to offer an effective resistance to the Exit of air under strong pressure. When they are in apposition, the air space below them is wedge-shaped, so that the column of air, pressing up from the trachea, can, as it were, wedge itself between them. In so doing, it will escape with a sound that is more or less vocal. Complete closure, with effective resistance to the exit of air, can be brought about only by the cooperation of the False cords and the ventricles of Morgagni, which act in the valvular manner already explained. I have never myself seen a case of this Spasmodic variety of laryngeal fatigue neurosis; but, from the description of its symptoms in recorded cases, I have no doubt that this is the correct explanation of its mechanism. A complete closure of the false cords over the true will cause the appearance of silent effort, as in the gutturo-tetanic variety of stammering; an incomplete, will permit of the escape of air, and the air in passing, will throw the true cords into vibration. In the latter case, one will hear those straining vocal noises (half smothered owing to the almost complete apposition of the false cords) that are so characteristic of the act of straining. In doubting the accuracy of the observations above referred to, I have the less hesitation, inasmuch as I recognise that, in order that the state of the glottis during the spasm should be displayed, it would be necessary for the patient to speak or sing while the mirror is in his throat, and also at the same time to have a true *involuntary* spasm—not merely make, voluntarily, what he might consider an imitation of one. The condition appears to me to be one in which the whole glottis, true and false cords alike, is seized with involuntary spasm, and is closed up, completely or incompletely, as it normally is during any act of straining.

---

[1] *Die Krankheiten des Kehlkopfes*, 3rd edition, 1890. Unfortunately the former edition, translated into English by Dr M'Bride, does not contain the section on the Laryngeal Neuroses.

[2] *Deutsche Medicinische Wochenschrift*, Feb. 1887.

The Tremulous Variety of writer's cramp is thought by Fränkel to be represented in the larynx by certain forms of involuntary and irrepressible *Tremolo* in the emission of notes; but he thinks the subject is as yet imperfectly understood, and does not enter further upon the discussion of it.

To the third or Paralytic Variety, Fränkel devotes special attention. He has had, in all, six patients who suffered from it: four public singers (three female and one male), one female teacher, and one preacher. He describes, as those of a perfectly typical case, the symptoms as they presented themselves in one of the lady singers. She was young, and apparently in excellent health; and she suffered from no trouble in the larynx except when she sang. When requested to sing, she began in a beautiful, strong soprano, clear as a bell; but, after a certain time, the voice became weak, and one could see that it was becoming more and more difficult for her to bring out tone as she had done at the beginning. "Finally she stopped, with tears in her eyes, in the middle of the song. When asked why she did not go on, she answered, 'I cannot. In the first place it gives me pain in the throat. That, however, I should not care for. But I am not able to sing any more: my voice is gone.' Although in giving this reply she spoke in a perfectly clear voice, it was impossible for her to sing again. The attempt to do so only produced a noise that scarcely deserved to be called tone." Laryngoscopic examination showed nothing distinct, although Fränkel was inclined to think that the vocal cords were no longer approximated quite so closely as they had been before the patient sang. In all the other cases the symptoms were closely similar to the above. The teacher, for example, after speaking for about an hour and a half, found that her voice became fatigued, and that she could not proceed further. The preacher found that his voice failed and disappeared in the course of the service. Like the other patients, *he had a painful feeling of fatigue* in the throat, followed by progressive failure of his voice, so that more and more effort was required to bring it out; and at length, bathed in perspiration from his exertions, he was obliged to bring the service to a close. In all other respects, the patients were in good health, and had no trouble, even with the larynx, except when they were using it professionally.

Fränkel devotes some space to the consideration of the treatment of such cases. He shows that hitherto the treatment of confirmed cases has been very disappointing; and he reminds his readers that the same may be said regarding the treatment of confirmed Writer's Cramp. As, however, in recent years, considerable success has been obtained in the treatment of Writer's Cramp by the use of Massage, he has, in one case, tried this treatment for fatigue neurosis of the larynx. The result he regards as encouraging. Anointing the throat of the patient with Lanoline, he stroked with the fingers the skin on each side of the larynx, along the anterior borders of the Sterno-mastoids, from the angles of the jaw downwards. At each sitting he made forty or fifty of such downward strokings; and, at the same sitting, ten or fifteen transverse strokings over the Hyoid bone. Improvement followed in a few days; and, although the lapse of time was not sufficient to enable him to say that a permanent cure had been effected, the patient had become able to sing for half an hour or more.

These cases of Fränkel's may be regarded as typical of the variety of fatigue neurosis which corresponds to the Paralytic Variety of Writer's Cramp. As has already been remarked, the larynx, in these cases, always performed its functions normally except when called upon to do professional work. There are other cases, however, in which a break-down occurring during professional exertion produces a hoarseness or aphonia that remains for weeks or months, showing itself even in ordinary conversation. Sir Morell Mackenzie records several interesting cases of this description. In the *British Medical Journal* for 1863, vol. ii., p. 313, he describes the case of a clergyman, in whom aphonia came on suddenly one evening when he was preaching in a large London church. "While in the middle of a sermon, he felt a sudden pain in the throat, and was obliged to finish in a whisper. He had, on two previous occasions, lost his voice in a similar manner, but on this occasion the aphonia persisted for about two months. Examination of the throat showed no trace of disease either in the larynx or in the pharynx." In the same paper, he also describes the case of a fish-hawker, in whom aphonia came on suddenly after he had been making great efforts one

Saturday evening. The patient partially recovered his voice, but the weakness subsequently increased, so that, for four months, he was obliged to give up his vocation. Laryngoscopic examination showed nothing but imperfect approximation of the Cords during the attempt at vocalization. In both of these cases, a speedy cure was affected by the employment of Intra-laryngeal Electrisation.

Michel, in a paper to be presently referred to, says that when, in a public singer, a break-down resulting from over-exertion is succeeded by persistent hoarseness, one should be very cautious about making an altogether favourable prognosis. He thinks that, in the greater number of such cases, a loss to the voice in metal, in polish, and in fulness of tone, remains ever afterwards; and that the voice may never regain its former staying-power.

Many other phenomena have been observed to occur in the vocal organism, when it is thus overstrained and made to break down. The Respiratory part of the Mechanism, apart from the larynx, may suffer during the disturbance, and may show the symptoms of failure of nerve power, or those of inco-ordinate action, or those of overflow into centres which normally should not be stimulated during speech or song. Two cases that have come under my own observation presented phenomena of this nature.

The first case was seen by me in December 1881. The patient was a young Scotch clergyman, of good physique, and apparently in good health, who for a year had been troubled, when preaching, with a "quick, catching cough, and a feeling as if his throat flapped together." This trouble first occurred after the patient had preached eight sermons on seven consecutive days, and was feeling fagged by the exertion. It afterwards recurred more or less severely every Sunday, so that he became nervous about it whenever he was called upon to preach. He thought that his nervousness aggravated the condition. The attacks were especially apt to come on if he felt tired. They always produced a quick succession of short, sharp coughs, which gave him much annoyance, and excited great sympathy for him among the congregation. He had had several holidays of some weeks' duration, but the cough had always returned when he resumed his service in church. He was recommended by me to try the effect of a dose of Bromide of Potassium half an hour before beginning the service; and, during service to take, from time to time, if threatened with the cough, a dose of a mixture containing Aromatic Spirit of Ammonia, Spirit of Chloroform, and Camphor Water. The case seemed one of spasmodic irritation of the coughing centre, produced by overflow of energy from the surcharged centre for phonation.

The second case, which I saw on the 10th of July 1888, was somewhat more complicated in its symptoms. The patient was a young English clergyman, engaged in Cathedral service. He, also, was of healthy appearance; but he informed me that during the previous winter he had been out of health, from a rather severe attack of diarrhœa, which lasted more than a week, and pulled him down a good deal. The first symptom that troubled him when speaking was a feeling of want of breath at the end of a sentence, and an inability to draw breath for the next sentence. Entering upon that sentence with scarcely any breath, he got "quite pumped"; but, when in this condition, he found that the power of inspiration returned to him spontaneously. He had a sensation "as if the tube were inclined to close;" and sometimes he had difficulty in getting breath out, as well as in getting it in. There was no pain. Sometimes, in reading, he had difficulty in pronouncing individual letters, such as **g**, and found it especially difficult to pronounce **o** without aspirating it. He found that he had more difficulty in reading in the low monotone required for the daily service in the Lady Chapel, than in reading in the high monotone required for the service in the Cathedral. His troubles caused a little gasping, with long pauses. Sometimes, when exhausted, he would end a sentence with a quaver. He always felt the services to be a heavy strain upon him, and was especially nervous when about to read. Preaching was easier to him; as he could then change the pitch of his voice, or pause, as he pleased. He was given a nervine tonic, and recommended to try the effect of a little Bromide of Potassium before beginning the service. This case is rather complicated; but its chief feature seems to have been a failure of power, and of co-ordination, in the Respiratory portion of the vocal mechanism. The difficulty of articulating certain consonants and vowels seems to indicate that the innervation of the Oral Articulative Mechanism was also to some extent disturbed.

In connexion with the most typical and common form of fatigue neurosis, viz., writer's cramp, it is now well ascertained that persons who are subjects of neurasthenia are more frequently and easily affected by the condition than persons of strong constitution. It is also known that temporary nervousness, such as might be produced by the presence of an onlooker, aggravates the condition for the time being. Reasoning from this analogy, we may believe that Neurasthenia and nervousness may also act as predisposing causes of the Laryngeal Fatigue Neuroses. The two cases last described seem to confirm this conclusion, as both patients asserted that their nervousness aggravated their symptoms.

In the treatment of all such cases of Fatigue Neurosis, prolonged rest from professional work is undoubtedly the leading indication; and this rest should be taken early, before the habit of break-down has become confirmed by frequent repetition. When professional duty is resumed, the greatest care should be taken to avoid overstrain; and the method of delivery should be most carefully attended to. Something more will be said about these matters presently. In some cases, the use of massage and electricity has been attended with good effects. When the patient is young, and as yet so little accustomed to clerical duties as to be agitated and nervous during their performance, I think it is reasonable to prescribe for him a little Bromide of Potassium, of which a single dose may be taken half an hour before service begins.

Pharyngeal Troubles of Professional Voice-users.

We now come to consider an affection that is believed to be peculiarly common among clergymen—so much so, indeed, that it has received, in this country, the name of Dysphonia Clericorum, or Clergyman's sore throat. Curious to say, it is an affection of the Pharynx rather than of the Larynx. In well-marked cases, it develops into the disease known as Follicular Pharyngitis; but in slighter cases there may be only Catarrhal Irritation with Relaxation and Congestion of the Pharynx, without special hypertrophy of its follicles.

The common occurrence of this condition among public speakers illustrates the fact that the Pharynx plays a most important part in the production of voice. Public orators, when speaking, have generally on the table beside them a glass of water, or of some special beverage, with which they refresh the throat if it begins to feel dry, or if the voice begins to be a little husky. Mandl, in his book upon the voice, devotes much attention to this subject, and gives us details about the practice of many well-known actors and singers as to it. He takes us behind the scenes: and tells how one celebrated artiste refreshes the throat, during the entr'actes, with soda water; another with beer; another with porter; and so on. How do these fluids act? Clearly they can never reach the larynx, but can only moisten the cavities of the mouth and pharynx. The necessity for them illustrates the great importance of the pharynx in voice-production. As a part of the vocal tube[1] or resonating chamber, the Pharynx helps to give volume and timbre to the voice: without it the notes of the finest larynx would be destitute of agreeable quality and of carrying power.

The views of Michel[2] on this subject are thus summarized by Schech[3]:—"The wall of the Pharynx forms the most important reflector for the sound-waves streaming out of the Larynx. Here, and against the Velum Palati, they first strike. If this wall is not smooth, but knotty and uneven, from granulations and hypertrophies, 'sound shadows' must be formed; just as an uneven mirror surface can give only a distorted image of a body placed before it. Owing to the faulty reflection, the tone thus suffers loss: it is weakened; it does not carry far; or, what is the same thing, it loses its metal."

---

[1] The expression "vocal tube" is used in one of the best pamphlets on the Physiology of the Larynx that I am acquainted with, namely, that entitled *Experimental Researches into the Physiology of the Human Voice*; a Memoir, by John Bishop, M.R.C.S., etc., 1836.

[2] *Die Krankheiten der Nasenhöhle und des Nasenrachenraumes*, 1876.

[3] *Die Krankheiten der Mundhöhle, des Rachens, und der Nase.* 3rd Edition, 1890.

Further, the Velum Palati and the Pharyngeal wall in acting as reflectors of the sound-waves are not passive and inert. Both in speech and in song, they are constantly in a state of great muscular activity. In speech, the Pharynx shares with the Oral cavity the duty of shaping the Resonating Chambers for the vowels; and in song the Pharyngeal cavity is contracted or enlarged, shortened or elongated, in sympathy with the pitch of the notes,—being in the highest notes shortened and contracted, and in the lowest elongated and enlarged, to a remarkable degree. This constant activity may help to explain its known liability to inflammatory irritation when overworked by public speaking. Even dryness of the Pharynx tells unfavourably on the voice; and, naturally, disease has still more marked effects.

Schech[1] gives a very detailed account of the present state of knowledge as to the causation, symptoms, and treatment of Follicular Pharyngitis; and the subject will also be found ably discussed in Sir Morell Mackenzie's work on the *Diseases of the Throat and Nose.*

It appears, as the result of recent observation, that the affection is, in its slighter degrees, exceedingly common. Schech goes so far as to say that there is scarcely a grown man who is quite free from some amount of granular change in the pharyngeal mucous membrane. Children, up to the age of twelve, are generally free from it; and the female sex also enjoys comparative immunity.

Among the predisposing causes, are certain constitutional states, such as Scrofula, Heart disease, and the state of constitutional weakness that sometimes follows an attack of one or other of the acute infectious diseases. It is common among persons engaged in occupations that expose them to the respiration of a dusty or impure atmosphere. It is common, also, in those who exercise their voices professionally; more especially in clergymen and in military officers—being in the latter produced by straining of the voice in shouting commands. It may thus either be originally produced by overstraining of the voice, or, having been produced otherwise, be agravated by it. Other causes, which seem capable of exciting or aggravating the affection, are the habitual use of tobacco in smoking or snuffing, and the use of hot spices or condiments with the food, or of irritating drinks such as alcohol. It will here be unnecessary to give a detailed description of the appearances in Follicular Pharyngitis, but it may be said briefly that three forms of the affection have been distinguished, viz., (1) the Simple Hypertrophic, (2) the Hypertrophic with excessive Secretion, (3) an Atrophic form, which seems to be the outcome of the Hypertrophic ones. In the Hypertrophic forms, rounded granulations, or elongated elevations, or extensive patches of thickening are visible on inspection; and these, on microscopic examination, are found to be made up of hypertrophied mucous glands, with surrounding infiltration of lymphoid tissue. In the areas of hypertrophy, the orifices of the mucous ducts are often observed to be widely open; and, from these openings, in the form of the affection that is attended with increased secretion, whitish masses or shreds of secretion may depend. In the Atrophic form, the mucous membrane in the atrophied parts is thin, smooth, and dry.

---

[1] *Op. cit.*, p. 122, *et seq.*

When the condition is well marked, the patient complains of a constant irritation at the back of the throat, as if some foreign body or irritating particle were lodged there. He is constantly hawking or clearing his throat to get rid of this irritation; and he may be rendered so miserable by it as to become hypochondriacal, or even, sometimes, suicidal. Cough is also frequently excited; and, as the inflamed surface may bleed, Hæmoptysis may occur. Besides cough, another result of reflex irritation is spasm of the glottis; which, however, is met with only in a very small proportion of the cases.

To the professional voice-user, one of the most serious of the symptoms is the Hoarseness that attends upon this affection. This may exist without direct involvement of the Larynx in the inflammatory change, as has already been explained; but there is no doubt that in some cases the disease extends into the Larynx; and that in others the constant coughing and clearing of the throat overstrain the Larynx, and, by exciting congestion and catarrh in it, tend materially to aggravate the hoarseness.

In treatment, the general health should be attended to. The use of tobacco and of stimulating foods and drinks should be forbidden. Prolonged rest should be given to the vocal organs, and the inflamed parts should be treated locally. For the local treatment of slight cases, sprays have been found of great service. A two per cent. solution of Bicarbonate of Soda, or Bicarbonate of Potash, or a solution of Chlorate of Soda may be used in this way; or, with the view of soothing irritation, a four per cent. solution of Bromide of Potassium. For more severe cases, Schech speaks highly of Mandl's Iodine solution, which is made up of Iodine, Iodide of Potassium, Glycerine, and Oil of Mint. If a good result be not obtained from these measures, the granulations may be destroyed individually by means of escharotic paste, or by the actual cautery. Mackenzie prefers to apply to them the escharotic London Paste, by means of a wooden spatula. Schech and others cauterize them with the galvano-cautery. Sajous[1] prefers to use, for this purpose, the end of a thick wire, heated to redness over a spirit lamp. Of course such energetic treatment should be undertaken only by a skilled surgical specialist. All the authorities are agreed as to the efficacy of such energetic local treatment in cases that without it would be incurable.

---

[1] *Diseases of the Nose and Throat*, by Chas. E. Sajous, M.D., 1888.

The atrophic form, Pharyngitis Sicca, is not so amenable to treatment as the hypertrophic one. All that can be done is to keep the parts clean and moist, by means of nasal douches and oral sprays: the sprays that are preferred being those of warm milk, mucilaginous decoctions, one per cent. solution of common salt, sulphur waters, etc. The nasal cavities often require special attention in such cases, as the disease is apt to involve the walls of the Naso-pharynx.

Michel[1] has lately written an interesting paper as to certain slight morbid conditions that are apt to damage the voice in singing, by interfering either with the contractions of the Palato-pharyngei muscles, contained within the Posterior Pillars of the Fauces, or with the free movement of the Velum Palati. He holds that the Palato-pharyngei muscles, acting in association with the Thyro-hyoid, Sterno-hyoid, Crico-thyroid, and others, assist in shaping the Rima Glottidis for the production of high notes; and that anything interfering with their free contraction will therefore have a damaging effect upon the power and purity of the voice. Anything interfering with the free elevation of the Velum Palati tells injuriously upon the voice by interfering with the action of that part in its function as a Resonator. Among the slight conditions that interfere with the action of the Palato-pharyngei muscles, he enumerates a Paretic condition of the Soft Palate, adhesions of the Tonsil to the Posterior Pillar of the Pharynx, the growth of Tonsillar Tissue in the substance of the Posterior Pillar, and the presence of follicular granulations upon the surface of the Posterior Pillar. In treatment, he divides adhesions of the tonsil and removes tonsillar growths and follicular granulations by means of the galvano-cautery, and endeavours to restore the muscular power of the Velum by gymnastic exercises of it. Besides paresis of the soft palate, he mentions Hypertrophy of the Naso-pharyngeal Tonsil as another condition which may interfere with the upward movement of the Velum. He recommends removal of the hypertrophied texture.

A question that has engaged the attention of many writers on Voice-Production is—How is it that, of all professional voice-users, clergymen are the most affected by Follicular Pharyngitis? The answer given by these writers almost always is, that in preaching, more than in other forms of public speaking, the voice is apt to be used in a strained and more or less unnatural manner. Dr Hullah teaches that the public speaker should find what is the most natural and easy pitch for his speaking voice, and that he should use this pitch in his public speaking. Macready, also, the English tragedian, has left us his opinion upon this subject.[2] He says,

---

[1] Dr C. Michel of Cologne, *Deut. Med. Woch.* May 1889.

[2] See letter to Dr Mackness, printed in the latter's *Treatise on Dysphonia Clericorum.*

"Relaxed throat is usually caused, not so much by using the organ, as by the kind of exercise,—that is, not so much by long or loud speaking, as by speaking in a feigned voice. I am not sure that I shall be understood in this statement, but there is not one person in, I may say, ten thousand, who, in addressing a body of people, does so in his natural voice; and this habit is especially observable in the pulpit. I believe that relaxation of the throat results from violent efforts in these affected tones, and that severe irritation and often ulceration is the consequence. The labour of a whole day's duty in a church is nothing, in point of labour, compared with the performance of one of Shakespeare's leading characters, nor, I should suppose, with any of the very great displays made by our leading statesmen in the Houses of Parliament. I am confident as to the first, and feel very certain that the disorder which you designate as the clergyman's sore throat is attributable to the mode of speaking, and not to the length of time or violence of effort that may be employed. I have known several of my former contemporaries on the stage suffer from sore throat, but I do not think that among those eminent in their art it could be regarded as a prevalent disease."

We are told by Mandl of the care that another actor took to use his voice at its natural pitch. He tells us, as to Talma, the great French actor, that immediately before going on the stage he used to ask some bystander, "What time is it?" and, on getting a reply, to say, "Merci, Monsieur." On passing to the stage, he kept in recollection the pitch of these everyday words of his own, and was careful to use it in his first words to the audience.

Much that is interesting and important upon this subject will be found in the work of Dr Hullah. But we need not dwell upon it. It is sufficient to say that when a clergyman begins to be troubled with sore throat, he should look well to his method of enunciation; and that, if the method be faulty, he should correct it without delay. In doing so, he may be encouraged by the example of Cicero himself, as to whom, in Middleton's Life of Cicero (quoted by Dr Mackness), there is the following passage:—

"Cicero says of himself, 'My body at this time was exceedingly weak and emaciated, my neck long and small, which is a habit thought liable to great risk of life if engaged in any fatigue or labour of the lungs; and it gave the greater alarm to those who had regard for me, that I used to speak without any remission or variation, with the utmost stretch of my voice, and great agitation of my body. When my friends, therefore, and physicians advised me no more to meddle with causes, I resolved to run any hazard rather than quit the hopes of glory which I proposed to myself from pleading; but when I considered that, by managing my voice and changing my way of speaking, I might both avoid all danger and speak with more ease, I took a resolution of travelling to Asia, merely for an opportunity of correcting my manner of speaking.'"

Other points to be attended to are:—(1.) The posture in reading should be such as to let the speaker stand upright; the reading desk being raised enough to let him follow the print easily without stooping over it. (2.) The speaker must take care to correct any tendency to speak from a chest insufficiently filled with air. Cases are reported in which great relief was got by careful attention to taking breath at suitable intervals. (3.) Dr Hullah points out that the liability of clergymen to sore throat may also, in some degree, be due to the long intervals of rest between the weekly occasions of effort; and he suggests that clergymen, besides attending carefully to their mode of enunciation on Sundays, should exercise the voice in reading aloud, etc., on week days.

These recommendations appear to me to include all that is really essential as to measures of prevention. When the mischief is done, rest is the chief indication; and the medical treatment should include both such general tonics and regimen as may be required by the state of health and such local treatment as has already been described.

The habit of smoking should, in cases of Follicular Pharyngitis, be strictly forbidden. I saw, on the 10th of October 1891, a case in which the local appearances spoke eloquently as to the affection being due to the habit of smoking. Along with much congestion of the soft palate and pharynx, increased secretion of mucus in the pharynx, and enlargement of several follicles on its posterior wall, there was, in the buccal cavity, a most peculiar condition: over the whole of the roof of the mouth, as far back as the junction of the hard with the soft palate, the mucous membrane was thickened and whitened; and everywhere the whitened surface was dotted abundantly with little black spots, like the black tops of comedones on the nose. The black spots were the openings of dilated mucous ducts, blackened by tobacco smoke.

Many professional voice-users believe that some of the watering places, especially those with sulphur springs, are of value in the treatment of Follicular Pharyngitis.

Further, it may be added that, as the voice answers so sensitively to conditions of the health and nervous system, the professional voice-user should try to keep himself in good health and good spirits. No special rules can be laid down for him in this respect. The general rule that will be most valuable to him, as it is to us all, is that, in living, he should do his best, in every way, to pay respect, and yield obedience to the ordinary laws of health.

APPENDIX AS TO WRITER'S CRAMP.

As public speakers often become the subjects of Writer's Cramp, a few notes upon that affection, appended to this paper, may not be out of place. Public speakers are liable to become the subjects of it, because so many of them require, in preparing their orations, to commit them in the first place to writing. Much writing brings about fatigue in the hand, and induces this example, the commonest and most typical, of a Fatigue Neurosis.

Excellent accounts of the affection are so easily accessible, that it is here unnecessary to enter into any great detail regarding it. One of the standard papers on the subject, that by Dr G. V. Poore, is in the *Med. Chir. Transactions,* vol. lxi., 1878; and, more recently, Dr Poore has given an abstract of his views in the form of a short article contributed to Quain's *Dictionary of Medicine.* Further, a full and able account of the Professional Fatigue Neuroses in general, written by Dr Morris J. Lewis, will be found in the fifth volume of Pepper's *System of Practical Medicine.* In Ziemssen's *Cyclopædia,* also, there is the well-known article by Erb; and in Eulenberg's *Encyclopædie,* 1885, there is a full and instructive article by Von Remak.

In this paper, it will suffice to remind the reader of the leading features of the affection, and to note the means which have been used with most success in its treatment.

In speaking of the Fatigue Neuroses of the Larynx, the three chief varieties were noted to be,—(1) the spasmodic, (2) the tremulous, and (3) the paralytic, and it was remarked that, in presenting these varieties, the Fatigue Neuroses of the Larynx resembled the Fatigue Neurosis of the Hand called Writer's Cramp. Although the title "Writer's Cramp" seems to imply the existence of spasm as an invariable symptom, this is by no means actually the case. It is only in the Spasmodic variety that true cramp or spasm is the leading symptom; and in pure examples of the Tremulous and Paralytic varieties spasm is not met with. There are, however, many cases of a mixed character in which spasm is associated with tremulousness, or with paralysis, or with both.

As to the comparative frequency of each of the three forms, Von Remak, in the article above referred to, states that, of 64 cases which came under his own observation, 24 belonged to the purely Spasmodic Variety, 10 were cases of Writer's Palsy, and 8 were cases of Writer's Trembling. The remaining 22 were examples of combinations of two or all three of the above forms. Including some of the combined cases, it was found that spasm exhibited itself more or less in 34 of the 64 cases. A few words may be said about each of the leading varieties.

I. *The Spasmodic Form.*—When the patient is engaged in writing, spasm sets in in one or several of the muscles that are being used. Sometimes it is the Flexors that are affected, and then the pen is involuntarily grasped with great force between the thumb and fingers, or the thumb is bent strongly inwards upon the palm. Sometimes it is the Extensors, and then the index finger or thumb is straightened out and carried apart, so that the pen may drop from the hand. The spasms thus affecting the Flexors or Extensors may be either tonic or clonic: in the latter case the fingers, hand, or even whole arm, become affected with involuntary jerking movement. It may be said, however, that tonic cramp is far more common than clonic jerking, which is met with only now and again.

II. *The Tremulous Form.*—This variety, which is the most rare of the three, is constituted by the occurrence of trembling of the hand, and more especially of the fore-finger, whenever the patient attempts to write. At first, it is not so utterly destructive of the writing-power as is either of the two other forms; but, as it advances, it makes the handwriting more and more tremulous and wavy, until at last it makes it quite illegible. Wells notes that the fore-finger may, in some cases, remain more or less tremulous, even when the patient is not writing and the hand is at rest.

III. *The Paralytic Form.*—The leading feature of this form is simple want of motor power, exhibited by the hand when the patient is engaged in writing. For all other manipulations, the motor powers of the hand may be unimpaired; but, in a severe case, no sooner has the patient taken pen in hand, and made a few strokes with it, than he finds the motor power of his hand ebbing fast away, so that presently it may be almost impossible for him, even with the greatest effort, to write a single letter. Accompanying this progressive loss of motor power, there is an increasing and very distressing sense of fatigue in the hand and arm: the arm is sometimes described by the patient as feeling as heavy as lead, and as being at the same time quite sore with fatigue. Efforts to continue work with the disabled hand induce also a sense of profound general fatigue; and the exhausted patient, if he persevere, may, from his exertions, become bathed in perspiration. In rare cases, Vaso-motor changes are developed, the hand becoming turgid with blood and even slightly cyanosed. And, also in rare cases, shooting pains, of neuralgic character, may occur. The common troubles of sensation, however, are the sense of sore fatigue and the feeling of heavy weight; and these sensations may extend from the hand up even to the shoulder. Something of the feeling of sore fatigue and weight may be present even in the Spasmodic and Tremulous varieties, but it is most constantly developed, and most severe, in the Paralytic one.

Other points in the Symptomatology of Writer's Cramp, brought out especially by Dr Poore's careful examination of cases, are:—(1.) The occasional presence of neuritis in one or other of the nerves supplying the hand. This occurs most frequently in the trunk of the Ulnar Nerve, but is also met with occasionally in the Median, or in the branches of the Musculo-Spiral. It betrays itself by exciting Sensory disturbances, such as tingling and hyperæsthesia over the cutaneous area of distribution; and by producing, in the muscles supplied, a paretic weakness, which may be associated with perceptible wasting, with fibrillar movements, and with more or less diminution of response to the Faradic current. There may also be more or less tenderness to pressure over the trunk of the nerve. The occurrence of Neuritis in the Ulnar Nerve was well exemplified in a case of the Paralytic variety seen by me, for the first time, in October 1889. In this case, there was, along with a little tenderness over the nerve trunk, tingling sensation over the ring and little fingers, and very slight but perceptible wasting in the muscles of the Hypothenar Eminence. (2.) Alteration of Electrical Reactions in individual muscles. Dr Poore believes that the disablement of any one of the many muscles employed in writing may throw the whole process into disorder, by impairing a link in the chain of co-ordination. He examines the muscles individually with the electric current; and he states that, in a very large number of his cases, it was possible distinctly to make out, in the affected limb, that one or several of the muscles presented an alteration of electrical reaction. Usually this alteration was only of a quantitative character, being, in slight cases, a quantitative Increase, and, in severer cases, a quantitative Decrease of excitability to the electrical current. That such quantitative alteration existed, was made evident when the reactions of the muscles of the hand affected were carefully compared with those of the corresponding muscles of the other hand. Only in a few cases did he find, in muscles already wasting, the qualitative alterations known as the Reactions of Degeneration.

As to the Pathology of Writer's Cramp, much has still to be learned. It is unquestionably the result of over-fatigue, and is brought about by the continual repetition, hour by hour, and day by day, of the muscular movements required in the operation of writing. The mechanism of these movements is nervous as well as muscular, and the nervous impulses involve the activity of many nerve-cells and nerve-fibres, from the starting points of these impulses in the Cortex of the Brain, down, through the Spinal Cord, to their ultimate expenditure in the muscles. All of these cells and fibres being exercised, it seems reasonable to suppose that any one of them may become fatigued. Many will have it that Writer's Cramp is always peripheral, and due to local change in the muscles or in the nerves at or near their muscular distribution. Some, on the other hand, point to certain resemblances between Progressive Muscular Atrophy and Writer's Cramp, and teach that the latter is essentially a spinal affection, due to fatigue of the large motor cells in the Anterior Cornua. A third opinion, at present very powerfully supported, is that Writer's Cramp is essentially a Cerebral affection, due to exhaustion of that part of the Cerebral Cortex that is the primary source of nerve-energy for the muscular movements of writing. Although the subject is involved in great obscurity, there is pretty good ground for supposing that there is truth in each of the three hypotheses represented by these several views. Most authorities now think so. That the symptoms may spring out of exhaustion of the cortical centres seems to be rendered almost certain by the circumstance, already alluded to, that Writer's Cramp is most easily induced, and occurs most frequently, in those who, by inheritance, dissipation, worry, or overwork, are subjects of Neurasthenia or Hypochondriasis. In Neurasthenia, the supply of energy is below par, so that the motor cortex gets easily exhausted, and a Fatigue Neurosis is readily developed. It has also been observed that Nervousness, such as may be excited in the patient by the presence of an onlooker, aggravates the affection for the time being. Further, Dr Wells has, in his observations upon the allied Telegraphist's Fatigue Neurosis, noted that, in some cases, when the patient feels the inability to perform with his hand the simple manipulations required in using the Morse instrument, he at the same time experiences an inability to form in his mind a proper conception of the dots and strokes required for representation of the letters. I saw last August a patient, now suffering from marked symptoms of Neurasthenia, who, when speaking in public, has of late observed a want of power in the tones of his voice. Five years before, he had consulted me on account of a very distinct threatening of Writer's Cramp, produced by over-fatigue in writing. In this case, Neurasthenia seems to have been the predisposing cause of weakness both in the hand and in the Larynx.

But, while thus fully recognising the importance of nervous exhaustion as a predisposing cause of Writer's Cramp, we yet cannot exclude the probability that many cases are of local or peripheral causation. It seems certain that, among professional scriveners, the simple fatigue of the muscles by work specially hard and long continued is of itself sufficient to induce the affection, even where the constitution is quite robust. In these cases, peripheral changes in the nerves or muscles may be expected to occur with special frequency.

As to the possibility of Writer's Cramp having sometimes its origin in over-fatigue of the Spinal part of the motor tract, Dr Poore, in his chief paper, points out that several of the leading affections of the Spinal Cord may begin to betray themselves first of all in the hand, during the act of writing. Progressive Muscular Atrophy shows itself in this way more frequently than any of the others; but Dr Poore records also a case of Locomotor Ataxia that began with inco-ordinate movement of the hand in writing, and that developed to a marked degree in the upper, before it affected the lower extremities. Dr Poore supposes that in such cases there existed, in the first instance, a strong predisposition to the form of disease ultimately developed, and that the fatigue of writing merely acted as the accidental exciting cause that determined the locality for the first appearance of the symptoms. Quite lately, Dr Féré of Paris[1] has recorded a case of Jacksonian Epilepsy that first set in with tonic spasm of the fingers during the act of writing. He is disposed to think that there was in that case a predisposition to Epilepsy, and that the locality of the first convulsions was determined by the fatigue of the act of writing. He refers to the experiments of Schiff, who shows that when a muscular act involving the contraction of only a limited group of muscles is so oft repeated as to induce fatigue, there is produced in the corresponding area of the Motor Cortex a condition of over-excitement that tends to invade the whole hemisphere of the same side, and ultimately even to spread to the other hemisphere. He thinks that this process may account for the generalization of the spasm that occurred in some of the attacks exhibited by his patient. Fully admitting, however, the possibility that an affection of the Spinal Cord or Brain to which there already exists in the patient a strong predisposition may thus have the locality of its first symptoms determined by prolonged fatigue in writing, we may reasonably ask whether it be not, even in the absence of such predisposition, possible that Progressive Muscular Atrophy may in some cases be excited by reckless endeavours of the patient to continue the work of writing after a Fatigue Neurosis in the hand has become fully developed. Onimus showed, in 1876,[2] that in artisans, such as blacksmiths, prolonged fatigue was capable of producing what he called a Professional Muscular Atrophy, an affection that he regarded as distinct from Progressive Muscular Atrophy. It seems, however, questionable whether a distinct line of demarcation can properly be drawn between the two affections; and some of the best authorities upon Muscular Atrophy do not recognise the distinction.[3] I have notes of two cases in which very striking and extensive atrophy of muscles began in the hand, and was attributed by the patients, in both cases, to over-fatigue. In the first of these, a clerk, aged 27, admitted into my Ward May 1st, 1886, the symptoms set in with a prickling sensation and numbness in the right hand and arm, when the hand was fatigued by writing. This was speedily followed by increasing loss of power and wasting in the muscles, so that he was soon obliged, in writing, to use the left hand. Presently, symptoms of the same kind appeared also in the left hand; and subsequently, year by year, the wasting increased, extending gradually to the arms and trunk. He had been the subject of these symptoms for about nine years before I saw him. When in Hospital, he presented extensive wasting of the muscles of the upper extremities and trunk, and was evidently the subject of an advanced Progressive

---

[1] *Comptes rendus des séances de la Société de Biologie*, Jan. 10th, 1891.

[2] *Lancet*, 1876.

[3] As to the frequency with which Progressive Muscular Atrophy results from fatigue in special groups of muscles habitually and excessively used in certain occupations, see article by Eulenburg in Ziemssen's *Cyclopædia*, vol. xiv., p. 114; also article in Eulenburg's *Realencyclopädie*, vol. xiii., p. 595.

Muscular Atrophy. His symptoms included well-marked fibrillar movements in the muscles affected. The second case was that of a blacksmith, aged 51, who was admitted into my Ward on Jan. 14th, 1888. His symptoms had set in eighteen months before, at a time when he was much overworked. One morning, in using the small hammer, the fingers of the right hand were seized with cramp. This continued to recur several times daily, and he soon noticed that the ball of his thumb was getting wasted, and that his fingers were getting weak, so that his grasp was too feeble to hold the hammer, which sometimes flew out of his hand. Wasting extended pretty rapidly both to the right arm and to the left hand and arm. When he came under my care, the hands and fore-arms were extremely wasted, the Extensor muscles of the elbow joints markedly so, and the Trapezius, Pectorals, Latissimus Dorsi, and Scapular Muscles, to a considerable degree. In this case, no fibrillar movements could be detected in the wasted muscles. It may be that in these cases there was a marked predisposition to Progressive Muscular Atrophy, and that the fatigue of certain groups of muscles merely played the rôle of an exciting cause. Nevertheless these two cases have suggested to my mind the possibility that there may be a form of Writer's Cramp in which the fatigued and exhausted portion of the motor tract is that part of the Anterior Cornu in the Spinal Cord that gives origin to the nerves for the hand; and that, in this form, a reckless persistence in the attempt to continue writing may lead, quite naturally, and without the co-operation of any marked predisposition, to the development of Progressive Muscular Atrophy.

As to the treatment of Writer's Cramp, complete abstinence from writing for a lengthened period is the measure urgently called for, whenever the development of the affection is distinctly threatened. Too much attention need not be paid to an occasional feeling of fatigue in the hand, or even to occasional cramp-like closure of the fingers upon the pen, if these symptoms occur only after very prolonged exertion in writing. It is probable that every one who has written much has had occasional experiences of this kind. But when these symptoms begin to trouble a patient whenever he writes a little, it is time for him for a while to give up writing altogether, if he can possibly afford to do so. If he must go on, then he should, if possible, use a pencil or stylographic pen; or, if this is not allowable, take care to use a penholder that is large and thick. Thick cork penholders are now sold, and a substitute for these can be easily made by fitting a cork upon an ordinary penholder. If the symptoms should still persist, it will be highly advisable that the patient should for a long period give up writing altogether. He might with advantage learn to use the American type-writer, which calls a different set of muscles into action; or, still better, employ an amanuensis. For cases in which the affection is distinctly threatened, as well as for those in which it is confirmed, the use of the Constant Current has been found of value, the anode being applied to the affected muscles and the kathode placed over some neutral part of the body. Of still greater value is the method of treatment by Massage and Gymnastics. This method has been systematized and developed more especially by Wolff of Frankfort (formerly a teacher of writing), and by Dr Schott of Nauheim. These specialists have obtained very remarkable results, which are testified to by many eminent Continental physicians and surgeons, such as Billroth, Charcot, and Bamberger. Wells, who has had personal communication with Wolff, thus summarizes his method :—"It consists of a combined employment of gymnastics and massage; the gymnastics are of two kinds: 1*st*, the active, in which the patient moves the fingers, hands, forearms, and arms in all directions possible, each muscle being made to contract from six to twelve times with considerable force, and with a pause after each movement, the whole exercise not exceeding thirty minutes, and repeated two or three times daily; 2*nd*, passive, in which the same movements are made as in the former, except that each one is arrested by another person in a steady and regular manner; this may be repeated as often as the active exercise. Massage is practised daily for about twenty minutes, beginning at the periphery; percussion of the muscles is considered an essential part of the massage. Combined with this are peculiar lessons in pen-prehension and writing." A fuller account of this method, by Dr Theodore Stein of Frankfort, with a record of ten cases successfully treated by it, will be found in the *Berliner Klinische Wochenschrift* for 1882, p. 527.

There seems to be no doubt that this method constitutes a decided advance in the therapeutics of Writer's Cramp. There are however, many cases,—especially, it would seem, those of Cerebral origin,—in which even this method is of no avail. On the whole, therefore, Writer's Cramp, when of long duration and thoroughly confirmed, must still be regarded as an affection that is apt, in a large number of instances, to prove persistent and incurable.

(*To be continued.*)

III.—ON CONGENITAL OBLITERATION OF THE BILE-DUCTS.

By JOHN THOMSON, M.D., F.R.C.P.E., Extra-Physician to the Royal Hospital for Sick Children; Lecturer on Diseases of Children, School of Medicine, Edinburgh.

(*Read before the Edinburgh Obstetrical Society*, 11*th November* 1891.)

WE find, scattered about in medical literature, a comparatively small number of cases which are usually described under the title "congenital obliteration, or absence, or malformation of the bile-ducts." These cases present a distinct series of symptoms, and may profitably be studied as a group by themselves.

The main clinical facts, stated very briefly, are as follows:—

The parents of the children seem healthy people, and yet in many cases it is found that they have previously had one child, or several children, similarly affected.

The children themselves are either jaundiced at birth, or they become so within the first week or two of life; otherwise they are healthy and well-nourished. In some cases, there is a discharge of normal meconium followed by colourless motions; in others, the fæces are devoid of colour from the very first. The urine is deeply bile-stained. The jaundice is of a dark greenish tinge, and lasts till death; and the motions remain colourless. A certain proportion of the children die from umbilical hæmorrhage within the first fortnight; and, of those who survive this period, a large number suffer from spontaneous hæmorrhage from other situations. The liver steadily enlarges, and the spleen also. After living some months, the children become more or less emaciated. Fits often supervene, and death ensues in the end in a state of exhaustion from some trifling intercurrent disease.

At the post-mortem, the liver is usually found much enlarged, of a very tough consistence—due to biliary cirrhosis—and of a dark green colour, owing to the presence of numerous masses of inspissated bile in the small bile-ducts. In the great majority of cases there is complete obliteration of some part or parts of the hepatic, common or cystic ducts, or of the gall-bladder, while, with very few exceptions, implication of the bloodvessels or other tubes in the neighbourhood is conspicuous by its absence.

What is the etiology and pathology of these cases?

How are the various symptoms to be explained?

In the present paper an attempt has been made to indicate what data we have wherefrom to form an opinion on these questions, *firstly*, by accumulating all the available details of all the published cases (along with those of an original case), and, *secondly*, by looking at them in the light of other clinical facts, and of the results of recent experimental investigation.

It may be objected that the reports of individual cases gathered from miscellaneous sources, which must form the basis of such an investigation, are often defective, and possibly sometimes incorrect and misleading; but then we must remember that our arguments drawn from this source are not to be regarded as forming a chain which is no stronger than its weakest link, but that they rather resemble a line of stepping-stones, by means of which, although individually they are not all very reliable, one may safely attain to a satisfactory conclusion,—always provided one does not attempt to put too much weight in places not able to bear it.

We shall first give the facts of our own case; then proceed to the examination of other published cases of congenital obliteration of the bile-ducts, and of cases of fatal infantile jaundice with pervious ducts; and, lastly, we shall consider the pathology and probable etiology of the condition.

I. CASE OF CONGENITAL OBLITERATION OF THE BILE-DUCTS.

Geo. Morrissey, aged 3 months, seen first on 6th July 1887 with Mr Geo. H. Temple.

Complaints.— Jaundice and whooping-cough. The former dating from the tenth day after birth, and the latter having begun five weeks before he was seen.

Parents.—The father, an Irish tailor, is dyspeptic (he died seven months later of carcinoma of the stomach); he denies ever having had any form of venereal disease. The mother seems healthy; has had no symptoms suggestive of syphilis, and no miscarriages.

Other Children.—One, a girl about 10, is alive and healthy. Three have died in infancy—two of "bronchitis," and one of "worms." None of them were ever jaundiced or suffered from hæmorrhages, and none of them had any symptoms of congenital syphilis.

Pregnancy.—During the whole time of her pregnancy the mother was insufficiently fed, and lived largely on fruit given her by a friendly greengrocer.

Labour.—The mother says that she was under chloroform for an hour and a half, and that instruments were used "because no pains came."

At birth, the child seemed perfectly well, and was not at all jaundiced. After about ten days, he gradually became yellow, and has been so ever since. He never had any hæmorrhage from the umbilicus. He was given the breast only, and throve very well till five weeks ago when the whooping-cough began. The urine was always dark and stained his clothes yellow. During part of the first week, he passed several dark green stools ("like those of other new-born babies"), but after that time the motions became clay-coloured. They have never had the slightest yellow or brown tinge. About a week ago some dark blood was seen in the motions, and about the same time there was bleeding from the mouth and nose. The bowels have always been freely opened three or four times a day; the child has never been subject to vomiting, and has had no fits. During the last week or so, he has been getting so feeble that he makes scarcely any noise when he cries. He has never had any symptoms suggestive of congenital syphilis. He has been given grey powders and cough-mixture, but has not improved at all.

Present Condition.—The child is tolerably well-nourished, but very weak and languid. The scalp is dry and scaly, the fontanelle somewhat depressed. The skin is very deeply jaundiced all over, and has a greenish-yellow colour. The conjunctivæ are also deeply jaundiced.

Abdomen.—Marked prominence over the region of the enlarged liver, which, on percussion, is found to reach in the right mammillary line from the upper border of the fifth rib to 2½ inches below the costal margin. On palpation, the organ is felt to be very hard, and its edge is sharp. The spleen is also felt hard and large. There is a small umbilical hernia. The abdomen is otherwise normal.

Thorax.—Tolerably well-formed. Heart and lungs seem normal. Slight bronchitis.

Treatment.—The whooping-cough and bronchitis were treated in the usual way, and a few doses of grey powder were given without any effect.

Further Progress.—18*th July*. The child has been getting steadily weaker, and has lost flesh markedly. During the last few days, the stools have been very dark from the presence of blood.

20*th July.*—Rapidly getting thinner and weaker. Motions still contain much blood. On the inner side of each calf there is a small hard nodule about the size of a pea; these are not tender, and the veins round about them are enlarged. The jaundice has varied in intensity from time to time, and is now distinctly less deep than it was a week ago. The urine is dark greenish-yellow, and turbid from the presence of much amorphous deposit. No albumen, no tube-casts found; a few coloured blood-corpuscles.

21*st July.*—Died quietly at 7.30 A.M.

Post-mortem performed at 11 A.M. on 22*nd July* (had to be done hurriedly and under considerable restrictions).

Child emaciated, skin deeply jaundiced, rigor mortis passed off, abdomen distended with gas. Reddish-brown fluid oozing from nose and mouth.

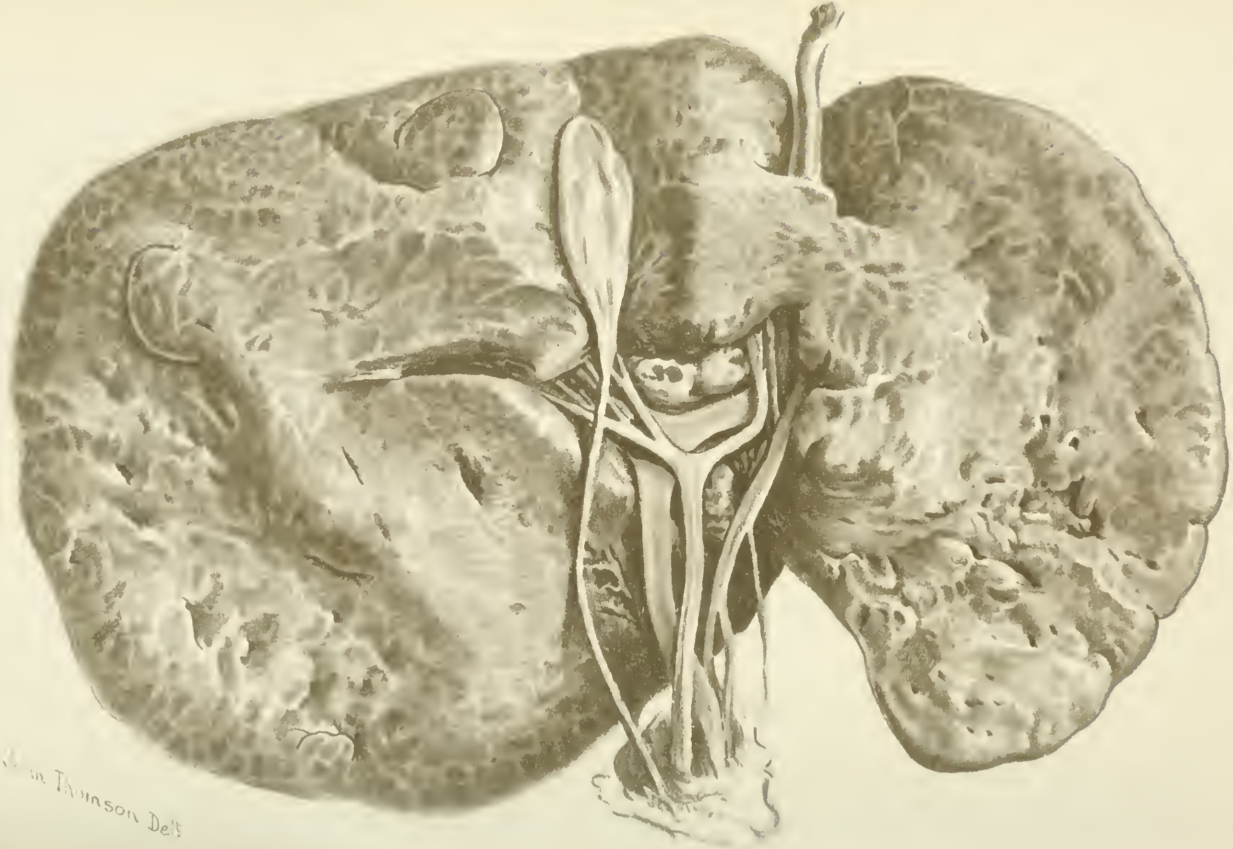
Thorax.—Heart and pericardium normal; pleuræ normal, with the exception of numerous hæmorrhages from one to three lines in diameter under the pulmonary layer on both sides. Lungs partially collapsed, partially emphysematous, and both show on section numerous small hæmorrhages. A good deal of bronchitis.

Abdomen.—Peritoneum normal, no adhesions or roughness, no ascites.

Liver much enlarged (the greatest diameters being 6¾, 4, and 2 inches), weight 13 ozs.[1] General contour not much changed. Colour very dark olive-green, with fibrous bands of a yellow tint passing over the surface in all directions. Surface somewhat irregular, like that of morocco leather (on a larger scale.) Capsule not apparently thickened, edges hard and rather sharp, consistence extremely hard and tough. The surface of a section has a dark olive-green colour, and is crossed by numerous greenish yellow

---

[1] That is a good deal more than twice the normal weight, *vide* Birch-Hirschfeld, Gerhardt's *Handbuch d. Kinderkrankh.*, Bd., iv., Abth. ii., p. 668.


John Thomson Del't

trabeculæ. A considerable amount of dark green fluid flows from the cut surfaces.

(Plate I. is from a drawing, and shows the morocco-like surface of the organ, as well as the condition of the gall-bladder and ducts.)

The hepatic ducts are not to be found in their usual form, but in their place there is a transverse sinus about 1¼ inches in length and ⅓ inch in diameter. On its lower surface it presents two little sacs bulging downwards (one of which has been opened in the drawing.) Its walls are thick and fibrous; its lumen is lined with a smooth membrane, and communicates by numerous openings with the dilated and thick-walled ducts in the interior of the liver. There is no communicating duct between this sinus and the cystic duct, and no distinct band of fibrous tissue can be found connecting the two. The gall-bladder is rather small; it is flaccid and wrinkled, and contains about 20 minims of a brownish watery fluid, like thin mucus. The cystic duct is small (perhaps ⅔ the normal diameter); it can be followed right down into the centre of the pancreas, and its lower two thirds, or so, which is of the same calibre as the upper portion, is all there is to represent the common duct.

Owing to the hurried nature of the post-mortem, the portion of the duodenum containing the papilla was left *in situ*, but there can be little doubt that it would have been found pervious, because fluid could be readily squeezed from the gall-bladder down as far as the middle of the pancreas where the duct was severed.

The bloodvessels are quite normal. The connective tissue round the vessels and ducts is possibly a little thickened, but certainly shows no evident traces of past inflammation, and there is no roughness or other abnormality of the peritoneum covering it. The pancreas and the portion of duodenum removed are normal. The lower parts of the bowel contained much blackened fæces. The spleen is large, measuring 3 × 1¾ × ⅞ inches; it weighs 1½ ozs. It is dark in colour, with a distinctly yellowish tinge, and is very tough. The Malpighian bodies are indistinct. The kidneys appear normal.

Microscopic Examination:—

Liver.—Several pieces of the right lobe were hardened in Müller's fluid, and several in spirit; and they were cut, stained, and mounted in the usual way.

On using a low power, one is struck at once by two things, —firstly, the section is traversed by a very coarse network of fibrous tissue, which is continuous with the lower layers of the capsule, and generally includes several acini in each of its meshes; and, secondly, the tissue looks as if peppered over with little dark spots. The largest of these are found to correspond in distribution with the strands of the fibrous network, while the smaller are most numerous in the inner zones of the hepatic lobules. On closer examination of the section we find the following conditions:—

The *capsule* is somewhat wavy in outline, and is thickened, but very irregularly. In some places it differs little, or not at all, from the normal in this respect, while in others it is six or eight times the usual thickness. It is thickest where it is joined by large branches of the interacinous network, and these places generally bulge somewhat on the surface. It contains numerous large vessels and sinuses filled with blood, and in its inner layers are many bile-ducts distended with green or brown masses of inspissated bile.

The *fibrous network*, already mentioned, is formed by broad bands of fibrous tissue which pass inwards from the capsule, and branch round the lobules. Generally the meshes include from 1 to 6 acini in each (mostly 1, 2, or 3), and these are more or less distorted in shape owing to the compression they are exposed to. In some places, what appears to be only a portion of a lobule is all that occupies a mesh. The knots, so to speak, of the network are represented by masses of fibrous tissue arising from an enormous increase of the connective tissue normally present in and around the portal spaces, while the connecting strands occupy interlobular spaces. The network is by no means a complete one, and there are numerous small islets of connective tissue at points in between the lobules, and sometimes wedged into the substance of them, as it were. In stained specimens, the fibrous bands are usually more deeply coloured along their outer margins, owing to the presence of numerous proliferating cells. This fibrous tissue, like that of the capsule, contains numerous dilated bloodvessels and bile-ducts. The arteries appear to be increased in number as well as in size, they are tortuous in their course, and some of those seen on section seem to have thickened muscular walls. The bile-ducts are also tortuous and have thickened walls, and many of them contain large masses of inspissated bile. As to their distribution here, it is not so easy to make out as in the layers of the capsule, but they seem to be more numerous, on the whole, towards the periphery of the bands than in their centre.

In many places at the junction of the liver-lobules and the fibrous tissue, one sees most beautifully the arrangement of the liver-cells into parallel rows, and the formation out of them of new bile-ducts.

The *hepatic lobules* vary much in size, and also, as already noted, in shape, owing to the compression they are undergoing.

The microscopic characters of the liver-tissue vary very considerably in different portions of the organ, and even in different parts of the same section.

Firstly, a large proportion of the lobules are composed of very normal-looking cells, arranged in the usual way. The nuclei of these are well formed and colour well, and, indeed, in certain areas they absorb the carmine out of the picro-carmine stain in a very remarkably distinct way, and seem larger than usual, as if in a state of unusual activity.[1] In these acini one finds no intralobular cirrhosis at all.

Secondly, many of the cells even of the normal-looking lobules contain vacuoles, and some of these are so large that the cell seems transformed into a vesicle, and the nucleus is not to be seen. Many, if not all, of these vacuoles are merely the spherical spaces left from the oil having been dissolved out of fatty globules during the hardening process. Most of them do not stain with osmic acid at all, but in a few it brings out a black crescent or radiating crystals.

On looking over the sections with a low power, one notices here and there smudged-looking patches which have not taken on almost any stain. These areas shade off almost imperceptibly into the surrounding tissue, and are not bordered by a line of deeply staining cells. Under a high power, they are found to be composed more or less entirely of cells which have become distended with colourless fluid until they are quite globular and much larger (2–4 times) than normal. It looks as if the vacuole had gone on enlarging till all the cell-contents, including the nucleus, had disappeared, and a simple bladder resulted. The exact localization of these areas is not always easy to determine; in some cases they occupy a segment (a quarter or so) of the circle formed by the lobule, but often their position is less distinctly defined. They seem usually free from bile-masses, even although these may be plentiful in the adjoining liver-tissue. Some of these patches appear shrivelled and small, as if in process of being absorbed and replaced by a sort of cicatrix. It seems possible that some of the islets of fibrous tissue, before alluded to, may have arisen in this way, and if so, this would account for the apparently intralobular situation of some of them.

It is very difficult to ascertain the cause of these appearances; but, judging from their situation and surroundings, one is inclined to think that they must be due in some way to the pressure exerted by the newly-formed connective tissue. It is, however, possible that the state of stagnation of the bile may in some unexplained way have to do with their causation. These areas, especially when the process is far advanced in them, are certainly strikingly similar in appearance to those figured by Beloussow in his article "On the Results of Tying the Ductus Choledochus in Animals,"[2] which he regards as little patches of localized gangrene brought about by the bursting of over-distended bile-capillaries. He found, however, that it was only during the earlier days after the operation that this appearance was met with, and that a week or two later they were replaced by fibrous cicatrices. Pick also, in his paper on the same subject,[1] gives a somewhat similar figure of a necrotic area.

---

[1] See Hamilton, *Journ. of Anat. and Physiol.*, xiv., 1879, p. 185.

[2] P. N. Beloussow, *Arch. für Experiment. Pathol.*, xiv., 1881, p. 200.

Thirdly, there is a morbid change which resembles that just described in some ways and differs from it in others. Under the capsule—especially marked near the sharp edge of the liver—there is a homogeneous-looking zone which scarcely colours at all with stains. It stretches along parallel to the capsule without regard to the limits of the individual lobules, and is bordered by a richly nucleated, brightly-staining line. There are very few fragments of bile seen in it. On closer inspection this turns out to be apparently an area of coagulation-necrosis, in which the cells are breaking down by atrophy and fatty change, and are being absorbed. Its situation and distribution suggest that it is probably caused by the compression exerted by the thickened capsule and other newly-formed fibrous tissue. In the part which is beginning to be affected, we find the nuclei much increased in number and very deeply stained. There are also many vacuoles. As one passes from the more healthy surrounding tissue towards the centre of the morbid area, these vacuoles increase in number and size, the nuclei rapidly lose their power of absorbing colours, and the cells become atrophied or fattily degenerated and break down. In the parts most affected, the cellular structure is difficult to make out. In thin sections, from which the cellular debris has been shaken out of this area, one sees that there is a delicate network of intercellular fibrous tissue left.

Fourthly, one of the most noticeable features of the sections is the large number of little masses of inspissated bile scattered about over them. These plugs are found, as already noted, distending many of the small bile-ducts, the largest of them being seen in those ducts which are among the fibrous tissue. Of the smaller ones, the majority are found in the inner two-thirds of the lobules, and the number of them in many places is very great. In this situation we find, on looking closer, that by far the largest number of these little fragments are not, as one might perhaps have thought at first sight, *in* the liver-cells, but lie between them, constituting, in fact, casts of the bile-capillaries, and many of those which are cut lengthways have a branched configuration.

A few of the cells, however, do seem really to contain fragments of this material inside them. We find some, for example, which have a stained nucleus and tolerably healthy-looking protoplasm, and in it one or two small round green masses. These latter, by their shape, size, and position, remind one very much of the intracellular bladders which Pfeiffer and Kupfer[2] have described as occurring in the cells of the rabbit's liver after injections with Prussian blue, and they may possibly be casts of similar cavities here.

Where larger fragments occur, the cell in which they are seems usually more or less free from stain, and without a visible nucleus. In many places, one finds several different-sized masses lying together inside what looks like a cell-wall, with only a little granular unstained matter about them, as if the damming back of the bile into the inside of the cell had caused dissolution of the ordinary cell-contents. This may probably account for the number of cells which seem to have disappeared from the inner zones of those lobules in which the bile-plugs are most numerous, the absence of which gives those areas such a ragged look under a low power.

---

[1] Ernst Pick, *Zeitschr. f. Heilkunde*, xi., 1890, 2 and 3, p. 117.

[2] Hermann's *Handbuch der Physiologie*, Th. i. p. 226, 1883.

It is difficult to see why these fragments of bile should be localized so markedly in the inner zones of the lobules. Wyss, in his observations on the histology of obstructive jaundice (in adults),[1] found that when the obstruction had only existed a short time, the cells in the inner zone were diffusely stained with bile; but that when it was of long (three years) duration, bile-plugs were met with at the periphery of the lobules. In our sections there are only a few cells that present the diffuse granular pigment described and figured by Wyss, and the cells thus affected are usually ones which form part of the wall of a bile-capillary which is distended with bile.

Spleen.—Sections of the spleen show the ordinary appearances of chronic hypertrophy of that organ.

Kidneys.—Sections of one kidney were also examined, and showed a few very fine bands of young fibrous tissue running inwards from the capsule—a very slight amount of interstitial nephritis. In other respects the organ seemed normal.

(To be continued.)

IV.—THE EARLIER LITERATURE OF THE THYROID GLAND.

By George Matheson Cullen, M.B.

At the present moment, when so many questions are being raised with regard to the thyroid gland, I do not think it will be out of place to collect together what has been said on this subject by the Fathers of Medicine. Such an investigation must also be of practical utility; for though every effort is now made to classify medical literature and to prevent any part of it from falling into oblivion, yet there are few who are acquainted with the works of bygone doctors, and there are very few indications to be had as to their lives and works. In this respect, in fact, we are sadly behind the times, as the very important subject of the history of Medicine is untaught in our universities and colleges, and hardly represented among English medical books. The intention of this paper is to trace the steps whereby our present knowledge in regard to the anatomy and physiology of the thyroid gland has been gained, by bringing together the most important utterances which have been made on this subject up to recent times. The pathology of the organ, especially in relation to goitre, has a literature at once so ancient and so extensive that I do not intend to enter upon it at all in this place. Of course, my primary object is the thyroid gland, and naturally this paper will appeal more to those who are interested in that organ; but, at the same time, I trust it may be of service to those who may wish to consult old medical works, and may serve, as it were, as a contribution to the earlier literature of Anatomy and Physiology.

---

[1] O. Wyss, Virchow's *Archiv*, xxxv., p. 553.

Among the ancients Anatomy and Physiology were almost altogether unknown. There are only a few books extant which treat upon these subjects, and of these the most important are some works by Aristotle and Galen. On this account we are quite prepared to learn that the thyroid gland was almost unknown to the ancients. It is true that Hippocrates says (*De Glandulis*, cap. ii.),—"Glandulæ vero etiam sunt ad utramque aurem, *circa jugulares venas*," etc.; and others have spoken in similar words, but the reference is too vague for us to place much dependence on it. So far as I know, antiquity possesses but one passage which undoubtedly points to the thyroid gland. This passage occurs in a book, *De Voce*, which is attributed to Galen, but only exists in a Latin translation. I give the English translation (*Tractatus* ii.): "For voice and speech are provided the tongue and the epiglottis and the trachea, and to each of these is given a certain glandular organ, to the end that each may be kept suitably moist. For the tongue there are two glands, which have two ducts through which the saliva flows to the tongue and to the whole mouth. The neck, however, has two glands in which moisture is generated; and in the epiglottis a thick and viscid humour is secreted for the moistening of that organ. But from the two glands which are in the neck and from the substance of the epiglottis are no ducts through which the humor may flow, as is the case in the two glands of the tongue. But those which are in the neck are of a spongy nature, and from them the humor oozes out and trickles down, there being no necessity for ducts (which the others need) whereby the fluid may be carried."

After Galen there is a long silence. The Genius of Medicine transferred its abode to the Saracens, and was well received by them, but it is doubtful whether the Arabs ever made any great advance in the science. They were skilled certainly, but their knowledge was almost entirely derived from old Greek works. The Arabian medical writers rarely did more than make translations and compilations from various authors. On this account Anatomy was not any better than it was before, and the religious regard with which the bodies of the dead were held forbade anything in the way of dissection. However, Christian Europe at last woke up, and universities began to appear, and a new epoch in the history of medical science dawned with the establishment of the Salernian School of Medicine. Other medical schools were soon established, which tried to eclipse the brightness of Salerno. Thus was promoted a healthy rivalry and competition, which undoubtedly gave a great stimulus to the study of Medicine. During all this time, however, Anatomy had, for various reasons, made but little progress; but at length Mundinus of Luzzi, Professor of Anatomy in Bologna, laid the foundation-stone of modern Anatomy by publicly dissecting before his pupils the body of a man. This ever memorable scene took place in 1315; and a few years later, probably in 1320 or 1321, Mundinus published a book on Anatomy. This work is nothing more than a mere pamphlet, but it is interesting as being the first contribution to Anatomy in modern times.[1] It contains no reference to the thyroid gland.

Other works on Anatomy gradually appeared, but they were hampered much by the difficulties of transcription and reproduction. On the discovery of printing, however, towards the close of the fifteenth century, a great impetus was given to the advance of knowledge, and books on Anatomy became much more frequent. The most important writers were Achillini,[2] Jacobus Berengarius di Carpi,[3] Alexander Benedictus,[4] Johannes Dryundrus,[5] and Bassianus Landus Placentinus.[6] Their works, all more or less good, were decidedly advances on that of Mundinus, but they were all o'ertopped and eclipsed by the *Anatomy* of Andrew Vesalius,[7] which appeared in 1543. This truly magnificent book is a folio volume of 800 or 900 pages, embellished with drawings from Nature. What is more wonderful than the completeness and thoroughness of the work is the fact that most of what is stated is the result of his own observation. It may well be doubted if one man ever did more for a science than Vesalius did for Anatomy. To us in the present instance this folio is of especial interest, for in it we find the first mention of the thyroid gland among the moderns. Out of several references I select the following (lib. vi. cap. iv.):—"This incision also shows two glands, one on each side of the root of the larynx, and these are large and somewhat fungous, and almost of the colour of flesh, but rather darker, with many prominent veins." Further on in the same chapter he suggests as use for the thyroid,—"This also do the glands which lie at the root of the larynx perform for the trachea, since they moisten its orifice with a humor not indeed fluid, but rather viscid and thick, for the glands themselves are thicker and denser than the rest of the glands which secrete a humor." In lib. ii. cap. 21, Vesalius depicts the thyroid in four of his diagrams of the larynx. It appears as two rounded bodies —one on each side of the base of the larynx.

---

[1] *Mundini Anathomia*, 4to, Papiæ, 1507.

[2] Alexandri Achillini, *Anatomia*, 8vo, Bononæ, 1520.

[3] Jacobi Berengarii di Carpi, *Isagoges breves, Perlucidæ, etc.*, 4to, Bononæ, 1523.

[4] Alexandri Benedicti, *Historia Corporis Humani*, 8vo, Basiliæ, 1527.

[5] Johannis Dryundri, *Anatomiæ*, 4to, Marpurgi, 1537.

[6] Bassiani Landi, *De Humani Corporis Historia*, 4to, Basiliæ, 1542.

[7] Andreas Vesalius, *De Humani Corporis Fabrica*, fol., Basiliæ, 1543.

Vesalius may be said to have raised the framework of General Anatomy, and of course the details had to be filled up as time went on. With regard to the thyroid, the world was quite content with his description of it for a hundred years. During that period most of the writers omitted referring to the gland, or spoke of it just in the terms of the description of Vesalius, *i.e.*, "Glandulæ ad laryngis radicem adnatæ." Among those who paid such scant attention to our subject I may, for the benefit of the curious, mention the following authors:—Willichius,[1] Stephanus,[2] Vassæus,[3] Protospatarius,[4] Eustachius,[5] Jacobus di Carpi,[6] Felix Platerus,[7] Fallopius,[8] Piccolhominus,[9] Rudius,[10] Kynloch,[11] Laurentius,[12] Cabrolius,[13] Riolanus,[14] Bauhinus,[15] Bartolinus,[16] Sylvius,[17] Johannes Daniel Hostius,[18] L. de Bils,[19] Hoffmann,[20] Highmore,[21] and Spigelius.[22]

Realdus Columbus[23] in 1562 pointed out for the first time that the thyroid gland was relatively larger in women than in men. Johannes Bokelius[24] advanced a use for the thyroid on the same lines as Vesalius,—" Lest constant respiration and the great difficulty of speaking and shouting should dry up too much the trachea and lungs, Nature has provided these glands to continually prepare moisture for them (lib. iv. cap. 12).

[1] Judochi Willichii, *Commentarius Anatomicus*, 8vo, Argent., 1544.

[2] Caroli Stephani, *De Dissectione Partium Corporis Humani*, fol., Paris, 1545.

[3] Ludovici Vassæi, *In Anatomen Corporis Humani Tabulæ Quatuor*, fol., Paris, 1553.

[4] Theophili Protospatarii, *De Corporis Humani Fabrica*, 8vo, Paris, 1556.

[5] Bartholomæi Eustachii, *Opuscula Anatomica*, 4to, Venitiis, 1564.

[6] Jacobi Carpi, *Isagoges breves et exactissimæ in Anatomiam*, 8vo, Argent., 1580.

[7] Felicis Plateri, *De Corporis Humani structura et usu*, fol., Froben, 1583.

[8] Gabrielis Fallopii, *Opera Genuina Omnia*, fol., Venitiis, 1584.

[9] Archangeli Piccolhomini, *Anatomicæ Prelectiones*, fol., Romæ, 1586.

[10] Eustachii Rudii, *De usu totius Corporis Humani*, 4to, Venitiis, 1588.

[11] David Kynlochi, *De Hominis Procreatione, Anatome, etc.*, 4to, Paris, 1596.

[12] Andreas Laurentii, *Historia Anatomica Corporis Humani*, fol., Francof, 1600.

[13] Bartholomæi Cabrolii, 'Αλφαβητον 'Ανατομικον, 4to, Genevæ, 1604.

[14] Johannis Riolani, *Opera Omnia*, fol., Paris, 1610.

[15] Caspari Bauhini, *Theatrum Anatomicum*, 8vo, Basil, 1621 ; *Anatomicæ Institutiones*, 1616.

[16] Caspari Bartolini, *Anatomicæ Institutiones*, 12mo, Argentorati, 1626.

[17] Jacobi Sylvii, *Opera Medica*, fol. Genevæ, 1630.

[18] Johan. Dan. Horstii, *Anatome Corporis Humani*, 4to, Marpurgi, 1639.

[19] Ludovici de Bils, *Specimina Anatomica*, 4to, Roterodami, 1641.

[20] Caspar Hoffmann, *Institutionum Medicorum, etc.*, fol., Lugduni, 1645.

[21] Nathaniel Highmore, *Corporis Humani Disquisitio Anatomica*, fol., Hagæ Comitiis, 1651.

[22] Adriani Spigelii, *Opera Omnia*, fol., Amstel, 1645.

[23] Realdi Columbi, *Anatomia*, 8vo, Paris, 1562.

[24] Johannis Bokelii, *Anatome vel descriptio partium Hum. Corp.*, 8vo, Helmstadii, 1585.

Julius Casserius[1] was the first to describe the thyroid as a single organ. In his *First Dissection of a Man* there is a drawing in which the gland figures as an oblong body stretching across the top of the trachea, and it is called "Corpus Glandulosum ad Laryngem ipsam situm." Strangely enough, he speaks in the text as if about two glands. He made some investigations as to the presence of an excretory duct, but came to the conclusion that there was none. He regarded the thyroid as having an important æsthetic use in filling out the sides of the neck. He goes on to moralize thus,—"And though it is only becoming that the soul, which is the noblest part of man, should have a splendid dwelling-place, kind Nature has especially beautified the gentle female sex with many sorts of ornaments. And not least among them is this one, that the empty spaces which exist around the larynx being filled up, they show to our eyes, to the great joy of our sight, a regular and rounded neck."

Jacobus Bordingus[2] re-echoed the opinions, and almost copied the words of Bokelius. Valverdo[3] was as much impressed as Casserius with the importance of the gland in relation to female beauty. This is a point which seemed to have a special attraction for many succeeding writers, though in recent times it has scarcely been mentioned.

The first anatomical work written in English is that of Thomas Vicary,[4] published at the end of the sixteenth century. It makes no mention of the thyroid gland; and Helkiah Crooke,[5] in his *Microeosmographia,* written in 1615, does little more than allude to it. In Bk. x. cap. 43, he says,—"There are also two (*i.e.*, glands) at the roote of the larinx or throttle, and two under the gullet, which oftentimes do so swell that they interclude the way both of meate and drinke; but of drinke especially, for the solid meate makes itself a way by compression, whereas that which is liquid doth rather fill the fungous substance of the glandule."

Fabricius de Aquapendente was, however, the first to definitely localize the thyroid as the anatomical seat of goitre. In his work, *De Gula,*[6] his statement is somewhat confused, but in his *Surgery*[7] he is quite distinct. He differentiates between bronchocele and gozzo (*i.e.*, goitre), and says the former arises from the trachea, while the latter always springs from glands, "especially from those placed immediately below the larynx at the sides of the trachea."

So far the thyroid had not received a title or name, but was described as the glands, or the unnamed glands, placed at the base of the larynx. In 1654, however, Dominic de Marchettis[1] gave to it the appellation of "Bronchial glands,"—"Besides the tonsils, other glands are to be seen between the tongue and the hyoid bone. Beneath the skin at a lower level are two large ones adhering to the sides of the trachea in front of the gullet, and these are called bronchial glands. These enlarge so much as sometimes to form a tumour in the neck, and this is called by us gozzo, but in Latin bronchocele." Marchettis evidently has no doubt as to the identity of gozzo and bronchocele, or as to its origin in the thyroid.

---

[1] Julii Casserii, *De vocis, auditusque Organis Historia Anatomica*, 8vo, Ferrariæ, 1600.

[2] Jacobi Bordingi, *Physiologia*, 8vo, Rostockii, 1605.

[3] Johannis Valverdi, *Anatome Corporis Humani*, fol., Venitiis, 1607.

[4] T. Vicary, *The Englishman's Treasure*, sixth edition, 8vo, London, 1613.

[5] Helkiah Crooke, *Microcosmographia, a description of the Body of Man*, fol., London, 1615.

[6] Hieron. Fabric. de Aquapendente, *De Gula Ventriculo et Intestinis Tractatus*, 4to, Patavii, 1618.

[7] Hieron. Fabric. de Aquapendente, *Chirurgia*, fol., Venitiis, 1619.

The term bronchial glands has been occasionally applied to this organ even to the beginning of this century; but the name by which it has become generally known in Descriptive Anatomy is that given to it by Wharton in 1656—I mean "the thyroid glands." This author devotes a whole chapter (cap. xviii.) of that most interesting book, the *Adenographia*,[2] to the consideration of these glands; and as it forms the first systematic description of them, I am tempted to translate the whole chapter.

"And first come into sight the thyroid glands, which are situated around the lower part of the larynx, lying immediately against the sides of the thyroid, cricoid, and a few of the upper tracheal cartilages; yet are they so placed as to be easily separated from these structures, except where they adhere more closely around their head, and at the points where the vessels pass in or out. In shape each is like an oblong fig or pear; but on the side that looks towards the trachea they are somewhat hollowed. On their external aspect they are rounded, and being thicker above approach the form of an oval, since between their lateral borders they bulge out a little towards the outside. As regards the substance of the glands, authors are not very consistent in describing it. They say that they are large, and, as it were, fungous glands, and that they are also dense, thick, and fleshy. Truly, if they are dense, thick, and fleshy, how can they be at the same time fungous, since fungous must be considered as equivalent to porous and spongy? Coming to the size of the organ, we found in a man of twenty-eight that each weighed 7½ drachms. In a fœtal calf already covered with hair, and in the last month of gestation, each weighed 1 drachm. . . . In the ox each does not exceed half an ounce. . . . As regards the fleshy part of their structure, it is much more bloody than that of other glands; it is also more viscid and solid, and like to true flesh. This, however, is of interest, that it is not fibrous, but rather glutinous, for which reason its parts firmly cohere together, and also resist considerably cutting with a knife, and that all the more also because of the branches of arteries and veins distributed throughout its substance, and because of the membranous connexions between the parts. The first and principal use of these glands seems to be to receive the excess of moisture from the recurrent nerve, and to conduct it again to the venous system by means of their lymph-vessels. Secondly, they warm the cartilages, which would otherwise be rather cold; for they are copiously supplied with arteries, and abound in blood, so that they easily impart heat to the surrounding parts. Thirdly, they conduce to the lubrication of breathing in the larynx, and so render the voice more light and sweet and clear. Fourthly, they contribute much to the roundness and beauty of the neck by filling up the vacant spaces around the larynx, and by rounding off the protuberances into a level and even surface; especially is this the case in females, in whom the glands are larger on this account, and whose necks are so beautifully rounded."

---

[1] Dominici de Marchettis, *Anatomia*, 4to, Patavii, 1654.

[2] Thomas Wharton, *Adenographia*, 8vo, Lond., 1656.

So ends the first detailed description of the thyroid gland, and in it we may notice that the imagination has greater scope than anatomists nowadays will admit. However, Wharton seems to have investigated the matter practically, as his remarks about the fœtal calf, etc., amply testify; and he made a great step in advance by bestowing the name thyroid upon the gland. No name could be more suited, because it was suggested, not by any fanciful idea as to its use or its shape, but merely on account of its anatomical situation beside the thyroid cartilage. Although, however, our organ had "risen to the dignity of a name," impartial investigation and patient dissection were not bestowed upon it for a long time. A few quotations will show how little was done by Wharton's fellow-countrymen; and on the Continent the case was little better.

Thomas Gibson[1] (1684) says,—"At the sides of this cartilage (*i.e.*, thyroid) and the following one are the glands placed called thyroideæ, which Dr Wharton says are of the shape of a pear or fig, being somewhat hollowed on that side next the aspera arteria, and somewhat copped on their outer side. Their substance is more solid than that of other glands, and like to musculous flesh, though it be not fibrous. They contribute to the roundness of the neck by filling up the empty spaces about the larynx, and the humor separated in them seems to serve for the lubrication of the larynx, whereby the voice is made more smooth and sweet" (Bk. ii. cap. 14).

James Keil[2] (1698) speaks thus,—"On the lower part of the larynx, upon the sides of the annulary cartilage and of the first ring of the trachea, there are two lymphatic glands called thyroideæ of the figure of a pear; their colour is red; they have veins, nerves, and arteries as the larynx" (chap. iii. sect. 7). Drake,[3] in the *Anthropologia Nova* (vol. ii., cap. 6), says,—"Near the larynx are situated four pretty large glands, two of which, called the amygdalæ, shall be accounted for among the glands of the mouth; the other two lie at the sides of the lower cartilage of the larynx, and are called glandulæ thyroideæ, which have no excretory duct (as yet discovered) belonging to them, but are looked on to be of the same kind with the thymus, and discharge their lymphæ into the thoracick duct."

---

[1] Thomas Gibson, *Anatomy of Human Bodies Epitomized*, second edition, 8vo, Lond., 1684.

[2] J. Keil, *The Anatomy of the Human Body Abridged*, 12mo, Lond., 1698.

[3] James Drake, *Anthropologia Nova*, 2 vols., 8vo, London, 1707.

William Cheselden had evidently paid some attention to the subject of the thyroid, as his remarks[1] will show,—" In the neck are situated a great number of these (*i.e.*, lymph glands) by the sides of the carotid arteries and internal jugular veins, and two, or a sort of double one, upon the larynx immediately below the thyroid cartilage, from which situation they derive their name of thyroideæ; and just within the thorax is situated another, called the thymus. In very young children the thymus is as large, or larger, than the thyroid glands; but in man these glands are very large and the thymus very small, the former having increased in about a double proportion of any other gland of this kind, and the latter having rather diminished than increased. But in brutes, such as have fallen under my observation, it is just contrary. From which observations I am inclined to conclude that they both belong to the same lymphatics, and that either of them increasing as much as both ought to do if both increased, answers the same end as if both did; and that the reason why the thymus increases rather than the thyroid glands in brutes is because the shape of their thorax affords convenient room for it to lodge in; and that in man the thyroid glands increased so much because there is no room in that part of the thorax where the thymus is seated for a large gland to be lodged."

On the Continent, as I have already stated, the subject of the thyroid gland was making as little progress as in England. Most authors contented themselves with repeating almost verbally what had already been said by Wharton and others. The only interest manifested was in the question whether the thyroid was a single or a double organ. Most anatomists declared that there were two glands, one on each side. Van Horne[2] in 1660, following Casserius, said there was only one. Philip Verheyen[3] was of a similar opinion; but, singularly enough, he represents it pretty accurately, only with the lobes pointing downwards instead of upwards. Bartholomæus Eustachius[4] also described the organ as single, and he gave to the structure joining the lateral lobes the name of isthmus. Morgagni[5] made several important additions to the known anatomy of the thyroid. It is often stated that to him is due the name isthmus applied to the central part of the gland. He himself states that the name had been given by a previous writer, and there can be no doubt that Eustachius was the author in question. Morgagni, however, was the first to describe a slender vertical column of gland tissue which he said might arise from either lobe, especially the left, or from the isthmus; to this structure he assigned the name of Appendix. To Morgagni is also due the credit of putting an end to the controversy as to the duality or singleness of the organ. He threw the weight of his name and influence on to the side that described a single organ; and he pointed out that those who believed there were two glands had been led astray by studying dissected animals, in which the isthmus was often absent. Looking back from this distance, we find it difficult to believe that the supporters of the single or the double organ could have entered such a trivial controversy with so much heat and enthusiasm, yet such was the case. Doubtless we are not unacquainted with the spectacle of men vigorously writing up their own ideas and strongly denouncing the honesty, propriety, common sense, aye, sanity of those who cannot agree with them; but we may well congratulate ourselves that the time has passed away when the concentrated essence of all that is caustic in wit and venomous in words was poured out (as now, fortunately, prominent politicians only know how) by celebrated anatomists, usually in the delightfully free and personal form of an open letter to no less celebrated opponents. A singular fact about these wordy battles is this, that the ardour of the combatants was in inverse ratio to the importance of the subject. So much was this the case that it passed into a proverb; and if a fierce discussion arose over any matter, outsiders would say that the "difference was about a gland evidently, and not about a man's head."

---

[1] W. Cheselden, *The Anatomy of the Human Body*, 8vo, London, 1730.

[2] Johannis van Horne, *Microcosmos*, 12mo, Lugduni Batav., 1660.

[3] Philip Verheyen, *Humani Corporis Anatomia*, 2 vols., second edition, Brux., 1710.

[4] Bartholomæi Eustachii, *Tabellæ Anatomicæ*, fol., Romæ, 1714.

[5] J. B. Morgagni, *Adversaria Anatomica Omnia*, 8vo, Lug. Batav., 1723.

But although Morgagni settled one controversy with regard to the thyroid, there was another, which was discussed with great animation long after his time, and on which anatomists did not become agreed till the beginning of this century. I mean the question as to the existence of a duct or ducts. Morgagni himself was of opinion that there were small ducts leading from the gland into the larynx, but these were so minute, "ut mirari non oporteat, quod tot delegentium Prosectorum oculos adhuc effugiant." Others, however, were not slow to describe ducts which, according to their own accounts, they had dissected out. Vater[1] and Santorini[2] found that the duct opened near the mouth of the laryngeal ventricle. Desnoes[3] traced the duct to the foramen cœcum of the tongue; and Coschwitz[4] was equally fortunate. Duverney, without going so far, was quite satisfied that there was a duct, and that this was nothing more than the pyramid. De Bordeu[1] described the ducts as passing through the cartilages of the trachea. As time went on, however, the opinion gained ground that there was no duct, and the descriptions which had been given of it were ascribed to the fertile imaginations of the anatomists who had declared they had found it.

---

[1] Abraham Vater, *De Ductu Salivali in Lingua*, 8vo, Viteb., 1723.

[2] Santorini, *Observationes Anatomicæ*, 4to, Venetiis, 1724.

[3] G. Desnoes, *Lettres à M. Guillielmi*, 4to, Romæ, 1706.

[4] G. D. Coschwitz, *De Ductu Salivali Novo*, 4to, Halæ, 1723.

Apparently the first monograph on the thyroid gland was that of P. Evertze[2] in 1708, but it contains very little in the way of information, and does not give a good account of the gland as it was even then known. He concludes an unsatisfactory memoir with this piece of advice, that if the reader wants to know something about this organ he had better study it himself, as there is a free field before him in that direction. The second monograph on this subject was published by Laloulette,[3] in the *Mémoires des Savants Etrangers,* in the year 1750. This is a very carefully prepared, full, and pretty accurate account of the thyroid gland; and this is probably due to his painstaking dissections of the bodies of both men and animals. He concluded that the nervous supply was from the first cervical nerve, and from nervous filaments springing from the "ganglion which the eighth pair forms with the intercostal." The vertical strip of gland tissue to which the name of appendix had been given was called by him the pyramid. Laloulette believed that the thyroid was a secretory gland, and to this conclusion he was led because of the large blood supply it possessed. He thought that the secretion passed away by the lymphatics, and was poured into the larynx, which it served to lubricate, at the same time giving suppleness to the glottis and rendering the voice softer. Ruyschius[4] in 1722 had expressed the opinion that the secretion was carried away by the thyroid veins; but Laloulette could not agree with such a statement, for he found that, on injecting the thyroidal vessels, the injection never was to be found in the acini of the gland.

Winslow[5] seems to have very carefully dissected the region about the thyroid gland, as his words clearly show,—"The thyroid gland is a large whitish mass which covers the anterior convex side of the larynx. It seems at first sight to be made up of two oblong glandular portions, united by their inferior extremities below the cricoid cartilage in such a manner as to have some resemblance to a crescent, with the cornua turned upward. It is of moderate thickness, and bent laterally, like the thyroid cartilage from which its name is taken. The two lateral portions lie on the musculi thyro-hyoidæi, the middle or inferior portion on the crico-thyroidæi. The thyro-pharyngæi inferiores send fibres over the gland, and they communicate on each side by some such fibres with the sterno-thyroidæi and the hyo-thyroidæi. . . . This gland seems to be of the same kind with the other salival glands, but it is more solid. Some anatomists thought they had discovered the excretory duct, but they mistook a bloodvessel for it. We sometimes meet with a kind of glandular rope which runs before the cartilago-thyroides and disappears before the basis of the os hyoides. This glandular rope goes out from the common basis of the lateral portions of the thyroid glands, and is lost between the musculi sterno-hyoidæi behind the basis of the os hyoides, or between the basis and the epiglottis. I have likewise shown in my private courses, on the side of the anterior ligament of the epiglottis, or that by which it is connected with the basis of the tongue, certain small openings. One of these openings appears like a small papilla, and this is the furthest that I have ever been able to trace the glandular rope."

---

[1] T. de Bordeu, *Chylificationis Historia, etc.*, 8vo, Paris, 1752.

[2] P. Evertze, *De Glandula Thyroideæ*, 4to, Lug. Batav., 1708.

[3] Laloulette, "Recherches Anatomiques sur la Glande Thyroïde," *Mém. des Sav. Etrang.*, tom. i., 1750.

[4] Ruyschius, *De Fabrica Glandularum in Corpore Humano*, 8vo, Leidæ, 1722.

[5] Winslow's *Anatomy*, translated from French by Douglas, second edition, 4to, London, 1763.

It is a curious reflection on the statements of Desnoes, Coschwitz, and Winslow, which were so long regarded as being the outcome of too fervid imaginations, to find that during development the appendix is really the duct of the thyroid, and opens into the foramen cœcum of the tongue. I have noticed this condition in a fœtus of seven and a half months, and, according to Quain's *Anatomy* (tenth edition), it is sometimes found in adult life. Haller, speaking with regard to Winslow and the others, said, "Clarissimorum virorum expectationi egregiæ eventus hactenus non respondit;" but time has given opportunity for further investigation, and we have now to confess to the accuracy and carefulness of their dissections.

Haller in 1765 published his admirable and well-known work[1] on Physiology, and with this work we may say that the gross anatomy of the thyroid gland was completed. I can cordially recommend his description of the organ (vol. iii. p. 394) to all who may wish a full account of it and an excellent summary of its literature. Haller also in his Disputations[2] devotes two or three short treatises to the subject of the thyroid gland; and in vol. ii. of this work he describes for the first time the vessel which is now known as the arteria thyroidea ima, which in his case arose direct from the aortic arch.

Though we can safely say that by Haller's time we had gained pretty well all the information we could get with regard to the macroscopic anatomy of the thyroid gland, the case was quite otherwise in regard to the physiology of that organ. As a matter of fact there is probably not another gland in the body over which so many speculations have been made, and with regard to which such diverse opinions have been held and so much uncertainty at present prevails.

---

[1] Albert v. Haller, *Physiologia*, 8 vols., 4to, Lausanne, 1767.

[2] Albert von Haller, *Disputationes Anatomicæ*, 7 vols., 4to, Gottingen, 1746.

We have already noticed that some considered that the thyroid secreted a fluid which was of great importance in the production of the voice. Martyn[1] was strongly convinced of the relationship between this gland and voice production, but he ascribed this to the thyroid acting as a "loader and strengthener to the larynx and vocal cords." Boécler[2] declared that the gland served to thin the fœtal blood, which would otherwise become too thick; and Raisslinus[3] held a similar opinion. Bellinger[4] also considered that the thyroid had its special use in the fœtus. According to him, the blood passed from the placenta to this gland and "unloaded itself there of its chylous milky juice;" this fluid passed by a duct into the mouth, and being a sort of intra-uterine milk, was swallowed by the fœtus.

A very curious opinion was advanced by Vercellonius.[5] He said that the gland was full of worms' eggs, and that these passed into the œsophagus through very minute ducts, and finally reached the stomach. There they seemed to be of use during digestion, though in abnormal conditions they might develop into worms. Diemerbrœck[6] also thought that the thyroid had some function as regards digestion, it being probably a salivary gland according to his view. Broussais (quoted by Madge) declared that the spleen, the thymus, and the thyroid glands had an independent movement, and served to propel the blood along the fœtal vessels. Autenreith[7] believed that the thyroid had a special function in preparing the blood for the changes it undergoes in the lungs. Ruyschius[8] was probably the first to suggest that some particular fluid was elaborated or separated from the blood in this organ, this fluid passing into the general circulation through the lymphatics and veins. This view became more and more general as time went on, though the exact meaning of the secretion and of its subsequent use was much discussed. Madge[9] thought the secretion was nothing more than a separation of impure matter from the blood, this matter being further subjected to a purifying process within the organ, and then returned harmless to the blood.

---

[1] Peter Martyn, "The Functions of the Thyroid Body," *Proc. Roy. Soc.*, vol. viii., 1857.

[2] P. H. Boécler, *De Thyroid, Thymo atque Supraren. Glandulis*, 8vo, Argent., 1753.

[3] E. Raisslinus, *De differentia inter Fœtum et Adultum*, 8vo, Argent., 1713.

[4] F. Bellenger, *Tractatus de Fœtu Nutrito*, 8vo, London, 1717.

[5] Jacob. Vercellonius, *De Glandulis Œsophagi Conglomerates, etc.*, 8vo, Astæ, 1711.

[6] Isbrandus de Diemerbrœck, *Anatome Corporis Humani*, 4to, Ultrajecti, 1672.

[7] J. H. F. Autenreith, *Handb. d. emperischen. menschlichen Physiologie*, 4to, Tubingen, 1801.

[8] Ruyschius, *De Fabrica Glandularum in Corp. Humani*, 4to, Leidæ, 1722.

[9] H. Madge, *Diseases of Fœtus in Utero*, 8vo, London, 1854.

Another opinion which received very wide support was that which made the thyroid a sort of blood-flow regulator. Thus Schreger,[1] Sœmmering,[2] and Ackermann[3] believed that it did not allow an immoderate rush of blood to the brain, and so prevented injury to that organ. Liebermeister[4] held this view, and so did Guyon.[5] The latter based his opinion on the examination of many parturient women, and believed that this function came into play chiefly during labour pains. He found that during the pains the thyroid was forced back against the carotids, and materially diminished, if it did not suppress the blood-stream to head and brain. But for this, he thought that rupture of the over-distended veins in the interior of the skull would be very common in labour. Magnien[6] considered that this function had much to do with the nutrition and development of the brain. In the fœtus the thyroid gland is relatively very large, and he pointed out that this pressure on the carotid caused the greater part of the blood to the brain to pass through the vertebral arteries. These vessels supplied mainly the medulla, pons, and cerebellum, and these parts of the brain developed more rapidly than the higher parts, which were supplied by the carotids. This theory was taken up and improved by Michel.[7] This investigator argued that the vertebrals supplied the part of the brain which had to do with the lower and more vegetative functions of the body, while the carotids supplied the intellectual portion of the encephalon. Thus in those people who had enlarged thyroids the mind was apt to be weak. The gland being proportionally larger in women, he declared that this caused their generative faculties to be more active, while their intellectual capacity was less developed than in men. Fair readers from Girton, listen! If perchance you do not gain that intellectual distinction which you deserve, hearken to Michel, he will console you—the fault is not, indeed, in your stars, but in your thyroids. We are not prophets, nor, perhaps, would we care to be; but those who pretend to read the future had better ascertain the full value of Michel's theory. If it be true, then a great change must arise in society. Every girl who proposes to graduate must first submit to an operation. One-half, at least, of the thyroid must be removed, so that one carotid artery, at least, may be free. Thus will the part of the brain pregnant with intelligence be copiously irrigated with the life-giving stream, and so will it be able to burst forth into wonderful bloom, and gladden (we hope) the whole earth with its blossoms. Naturally there will grow up two classes of women—the intellectual and the loving, those with half a thyroid and those with the gland intact. Antagonism between the two parties cannot fail to arise; but for the other possibilities I must refer the whole subject to Mr Rider Haggard, or some of his compeers, who will find it a suitable basis for a thrilling romance.

---

[1] B. N. G. Schreger, *Fragmenta Anatomica et Physiologica*, 8vo, Lepsiæ, 1791.

[2] S. T. Sœmmering, *Von Baue des menschlichen körpers*, 4to, Frankfurt am M., 1791.

[3] J. F. Ackermann, *Dissert. de Glandulis*, 4to, Dresdæ, 1813.

[4] Liebermeister, "Eine Ursacha der Ohnmacht," *Prag. Vicrt. jahrsch.*, t. xxxiii., 1864.

[5] Guyon, *Arch. de Physiologie*, vol. i., 1868, p. 6.

[6] Magnien, *Comp. Rend. Acad. Med.*, Paris, 1843.

[7] S. B. A. Michel, *Consid. Physiol. sur le corps thyroïde*, Thèse de Paris, 1850.

Less far reaching in its results would be the theory of John Simon.[1] For him the thyroid gland was homologous with the lung; and he declared that "it always maintains an intimate relation with the vascular supply of the brain, and is always so nourished as to be capable of a greater or less nutrition, according to the activity or repose of that nervous centre." Gallois[2] was inclined to consider that the principal function of the thyroid was the preparation of "hæmatose;" and this opinion became pretty general, the gland being thought to resemble the spleen in this respect.

A theory has been proposed with regard to the thyroid body by V. Horsley,[3] and though it dates only from 1886, I think I may be pardoned for mentioning it, if only merely in justice to Michel, Vercellonius, and other older theorists. Horsley has declared his belief that the symptoms of old age are merely phenomena caused by a decaying thyroid. Had Wharton made such a statement we would be inclined to smile at it, but science is saying such wonderful things nowadays that we are afraid to smile lest we should seem unscientific. We used to be amused in our youth by the stories of the quest for the *elixir vitæ.* Brown-Sequard has taken up the task scientifically, and we are ashamed of our past ignorant mirth. Some people, however, may have a prejudice against his elixir, but no one can object to the "brand" obtained from the thyroid. We may then expect to hear that injections of thyroid juice and transplantation of the gland into the bodies of old people have been tried with marked success. If Horsley be correct, then the Dr Faust of the future will have no need of Mephistopheles when he has a thyroid gland at hand.

Various other theories have been proposed to explain the function of the thyroid body, but I think I have included the more important of the older ones. This paper would, however, be incomplete if some reference were not made to the monographs on this subject published during the eighteenth century. I have already alluded to those of Evertze and Laloulette, but the curious will find very interesting matter in the treatises of

---

[1] John Simon, "Comparative Anatomy of the Thyroid," *Proc. Roy. Soc.*, vol. v., 1844.

[2] E. J. Gallois, *Recherches sur le corps thyroïde*, Thèse de Paris, 1851.

[3] V. Horsley, "Relation of Thyroid to General Nutrition," *Lancet*, 1886, vol. i. p. 3.

Hager,[1] Lauth,[2] Boécler,[3] Mayer,[4] Loder,[5] Schmidtmüller,[6] and Heden.[7]

In conclusion, I have to tender my best thanks to Dr A. A. Matheson, who has greatly assisted me in collecting the materials from which this paper was written.

V.—HERPES TONSILLITIS AS MANIFESTED IN NORTH CHINA.

By W. A. Henderson, Surgeon to the Imperial Maritime Customs, Chefoo.

During the cold season Chefoo has but little relationship to pathology. Dry, bracing atmosphere, blue skies, a powerful sun that from 11 A.M. to 3 P.M. melts the skaters' ice, just enough frost to prevent rain, are not the conditions favourable to the development of infectious disease. Yet the foreign settlement, being situated on the fringe of a large native population, is liable to the epidemics of the latter. Hence for the last two winters Europeans have suffered from the influenza, which has been prevalent among the natives. Last winter it appeared in November and continued till January, the larger number of cases occurring in January. Few houses were left unvisited. The character of the complaint was much the same as in England generally,—three days' fever, accompanied and followed by great prostration, and by derangement of the respiratory and intestinal tracts. When due care was not taken, relapse occurred. In one case it was very severe, and soon pulmonary abscess became manifest. Boracic acid (10 gr. three times daily) was administered, and in less than a week evacuation was complete, and the discharge, which had been copious and characteristic of sphacelus, ceased.

While influenza has attacked one or two individuals in most households, I have found that another form of epidemic had infected every person that I have examined, with only one exception. This affection took the form of herpetic tonsillitis, which, according to Dr Squire in the *Lancet* of 16th August 1890, is regarded by Trousseau as a form of sporadic influenza. My first case occurred on the 24th of November last, and presented the following symptoms:—The maximum afternoon temperature for the first week was from 102° to 103°; second week, from 101° to 102°; third week, 100° to 101°; and the fourth, 100°, there being in all a month's fever. The fall in the morning was from 1° to 1½°. On the first day of fever there was headache and sore throat, after which no pain in either region; very irritating cough during first ten days; further, no discomfort. From the first the pharynx generally, but the soft palate especially, was studded with large herpetic vesicles; while the fever subsided the herpes persisted. When the patient left China for England, early in April, he was in the same condition of throat. The soft palate was then thickly studded with vesicles, and from each vesicle proceeded a dilated vein. On the tonsils and posterior wall of the pharynx, which were formerly covered by a crop of vesicles, there were continuous patches of congestion, denuded of their epithelium. The appearance is similar, as far as those regions are concerned, to the case of sprue described by Dr Thin in the *British Medical Journal* of 14th June last. In fact, I have at present a case of sprue, contracted in South China, the pharyngeal aspect of which is identical with some of the cases of herpes tonsillitis in Chefoo.

---

[1] Johannes Hager, *De Glandula Thyroidea*, 8vo, Viterb., 1721.

[2] Lauth, *Diss. Inaug. de Glandula Thyroidea*, 8vo, Argent., 1742.

[3] P. H. Boécler, *De Thyroidea, Thymo atque Supraren. Glandulis*, 8vo, Argent., 1753.

[4] J. C. A. Mayer, *Hypothesis novum de Gland. Thyroidea*, 4to, Tragect. ad Viad., 1785.

[5] Loder, *Hypotheseos de Gland. Thyroidea*, 8vo, Jenæ, 1797.

[6] J. A. Schmidtmüller, *Die Ausfuhrungsgänge der Schilddrüse*, 8vo, Landshut, 1804.

[7] Heden, *Tractatus de Glandula Thyroidea*, 8vo, Leipsic, 1822.

In the middle of February the children of my patient (case of 24th November) were attacked by the disease. One child had a week's fever; before she had recovered another had it for two days. When they recovered from the fever the youngest took it, and had a nightly rise of temperature for a fortnight, it being normal during the day. All the throats were similarly affected, but in a less degree than in the father. The eldest boy had the throat symptoms, but no fever. A similar outbreak occurred in another household, and I then thought of the milk. In the former family I had associated the malady with defective drainage. Upon the udders of three cows I found vesicles. The dairyman declared that such vesicles were not uncommon during the first two months after calving. So frequent were they, he said, that he had never watched the term of duration. Four days afterwards the vesicles had dried up. I then made a visitation among the residents, and found that no throat had escaped, as mentioned. In one family of six children, two had two days' fever; the mother had one day of fever with stiff neck. In two other families a similar proportion had fever; but more frequently there is no fever, and seldom local discomfort. In these cases the fever did not appear for several days after the condition of the throat was observed, and, for aught I know, the same order in the succession of the two events may have obtained in the cases before mentioned. One patient, a boy, had a week's fever, the afternoon temperature reaching 105°, and, besides the inflamed throat, the chest was covered with erythema, and a few petechiæ appeared on the wrists.

A number of Chinese have also the throat affection. In a few the fever ran high, accompanied with great prostration, but no deaths have been heard of. None, however, have had the eruption so extensively as the case of 24th November. In his case the vesicles were of the largest size of herpetic vesicle. In some they were very minute, and limited to small patches on the anterior pillars of the fauces. Between these two extremes there were all degrees of development, frequently the whole of the soft palate being involved.

This affection is not limited to Chefoo. Eight patients from Mid-China lately consulted me for other troubles, but each, unknown to himself, had the throat symptoms, there being no accompanying discomfort. These facts indicate the widespread character of the epidemic. It is interesting to observe that Surgeon D. M. Moir, in the *Indian Medical Gazette* for December last, in his paper on Malaria and Influenza, enumerates among characteristic symptoms congestion of tonsils and fauces, but no mention is made of herpes.

The duration of the throat affection will be interesting to observe, as (unlike the pharyngeal herpes described by Dr Eustace Smith, the vesicles of which lasted from twenty-four to forty-eight hours, and which then disappeared without rupture, or left little white spots or circular ulcers) it as yet shows no signs of waning; and, according to Dr Stephen Mackenzie, it is not a condition to be lightly regarded, as he has known it lead to œdema of the glottis.

VI.—NOTIFICATION AND ITS EFFECTS.

By F. P. Atkinson, M.D.

No one will deny that notification, coupled with the correction of sanitary defects, will be found to effect a certain amount of good, because infectious disease must diminish in proportion as those things which are in opposition to Nature's laws and requirements are corrected; but I assert that the amount of benefit likely to result from this method cannot possibly compare with that to be obtained from house-to-house inspection alone, or followed by notification. The former method cannot prevent a certain number of lives being lost that would assuredly be saved by the latter. This cannot possibly be denied. H.R.H. the Prince of Wales, in his presidential address to the late International Health Congress, very wisely remarked, "If certain diseases are called preventable, why are they not prevented?" And applying the same line of argument, I would ask, If a certain number of deaths are preventable, why are they not prevented? To both these questions, I think, there ought to be a reply. Dr Spottiswoode Cameron, Medical Officer of Health for Leeds, at the same Congress said (according to the *Lancet* report), "While he was an advocate for notification, he had to choose between two things—house-to-house examination and notification; and if he could not have both, he would have house-to-house examination." Dr Whitelegge, Medical Officer of Health for the West Riding of Yorkshire, judging from his conversation with me, holds much the same view. When I urge that important discoveries in sanitary science have been made during the last few years, and that not one of them has resulted from dual notification, what do the advocates of this system say? "Rome was not built in a day, and it is not reasonable to expect the elucidation of complex problems of disease in a few months after partial notification has come into operation." They forget apparently that *partial* notification has been in force for upwards of fifteen years in England, and that it has been general in Denmark and Germany for upwards of thirty years. In the book on public health which was presented to the members of the late International Health Congress by the Danish Government, it is stated that there has been very little decrease in the death-rate of persons about the ages when infectious diseases are most common —and it is doubtful whether the death-rate in Germany with notification in force has decreased at a quicker rate than in England without notification. If this be the fact, to what are we to ascribe the improved condition of things in England? Surely to sanitation; and if this were carried on in a more systematic manner, the decrease in the death-rate would be still more marked than at the present time. The *Star* very pertinently asks, "Why does it always require a death and a coroner's inquest to set a sanitary authority in motion?" Numerous glaring sanitary defects exist in almost every locality, and these frequently are allowed to remain till an epidemic calls attention to their existence. In fact, it is often left to notification to accomplish what ought to have been brought about long before by proper inspection. The *Times*, in one of its leaders of August 24th on "Bumbledom and Disease," says, "We have no great faith in the efficacy of direct sanitary inspection of private dwellings by public authority;" but it would surely be right to insist that no person should let a house without producing a certificate of recent date from a properly qualified and registered sanitary officer to say that it is in proper condition, and having a copy appended to the lease or agreement. Houses under a certain rental might be inspected by the public sanitary authority, either for a small fee or gratuitously. These are some of the arguments I have to produce against the present system of notification, and also suggestions to offer for diminishing the present death-rates from infectious disease. No reply worthy the name has been as yet given to the statistics put forward by Mr Biddle at the late International Health Congress, and it is doubtful whether any can be given. Still, we shall be happy to hear at any time any fresh arguments that the advocates of dual notification as at present carried out may have to advance.

VII.—EDINBURGH OBSTETRICAL SOCIETY: VALEDICTORY ADDRESS.

By the President, D. Berry Hart, M.D., F.R.S.E., F.R.C.P.E.

Gentlemen,—In leaving the Presidential Chair, I do so with a strong appreciation of the great honour you conferred on me by electing me your President, and also one of gratitude for the very pleasant relations that have existed between us. The papers brought before us have been most valuable, and not the least gratifying feature has been the very great ability displayed by those of some of our younger Fellows,—an ability that promises great things for the future, and will, I am convinced, support and extend the high reputation our Society has already acquired.

To-night I wish to sketch briefly the history of Modern Gynæcology in its main aspects of progress, history, and present status. Such an attempt is full of difficulty—almost, indeed, of danger—as the opinions of gynæcologists on many subjects are greatly at variance. Yet a candid statement of my opinion may be valuable in eliciting the views of others, and enabling us to consider past errors, with the best way of avoiding them for the future.

Modern Gynæcology is at present near its jubilee. One has only to glance at some of the text-books on Diseases of Women, published fifty or sixty years ago, to recognise that Gynæcology did not then exist, even when one makes allowance for the time text-book writers take, as a rule, before they realize advance in science. In Gooch's *Account of some of the most Important Diseases peculiar to Women*, published in 1831, we find the greater part of the work taken up with obstetric conditions, diseases of children, and a discussion on the plague. Polypus uteri occupies forty-seven pages, and with a few on irritable uterus, the then lecturer at St Bartholomew's, London, concludes his work.

Blundell's work (1837) is one of a very different kind. He describes uterine displacements, bladder diseases, ovarian dropsy, polypi, uterine inversion, uterine cancer, as well as functional diseases. In his treatment he is in some respects as advanced as our most modern gynæcologists. His views on the surgery of the abdomen, based on experimental research, bear the mark of undoubted genius, and it is hardly credible that in 1828 such a correct and far-seeing statement as the following could be published:[1]—

> "I may be pardoned, perhaps, for endeavouring, on this occasion, to draw the notice of the profession to the following operations, all to appearance feasible,

---

[1] Blundell's works are his *Diseases of Women*, edited by Castle, London, 1837; his *Surgery of the Abdomen*, an appendix to Ashwell's treatise on Parturition, London, 1828; *v.* also *Lancet*, 1828.

though by no means all of equal promise, stating distinctly, at the same time, that my design at present is to recommend them to *consideration* merely, and not to *practice*, except as observed above, *in cases otherwise desperate.*

1stly. *A division of both the Fallopian tubes, and even the removal of a small piece of them, so as to render them completely impervious, a fit addition apparently to the Cæsarean operation, the danger of which it would scarcely increase.*—The effect of this operation would be to prevent subsequent impregnation, without, however, destroying the sexual propensities, or the menstrual action of the womb; and as many, besides Mr Barlow's patient, have, on the Continent, recovered from the Cæsarean operation, the possibility of a second need for it should, I think, by all means be precluded. In those cases also of contracted pelvis, in which, notwithstanding the excitement of parturition in the seventh month, it is still necessary to destroy the children by opening the head, and reducing their size in order to bring them down through the pelvis, I think it would not be amiss to adopt this operation in order to produce sterility. An opening, two fingers broad, might be made above the symphysis pubis near the linea alba; the Fallopian tubes might be drawn up to this opening one after the other, and a piece of the tube might then be taken out. This operation, much less dangerous than a delivery by perforating the head when the pelvis is highly contracted, may, I think, be safely recommended.

2ndly. *The extirpation of the healthy ovaries.*—This operation, even granting it to be safe, can scarcely in any instance be necessary, though it may be observed, by the way, that it would probably be found an effectual remedy in the worst cases of dysmenorrhœa, and in bleeding from monthly determination of the inverted womb, where the extirpation of this organ was rejected . . . .

3rdly. *The extirpation of the ovarian cyst in schirrus, combined with dropsy, or in simple dropsy*, will most probably be prevented by extensive adhesions, if the dropsical cyst be large and of long standing; but if the cyst be small, containing (as in Nathan Smith's case) a few pints only, the adhesions, it may be, will be found of small extent and easily separable. It remains to be ascertained, *by observation*, in what degree the abdominal adhesions may be divided, without an unjustifiable risk to the life of the patient. In the case of Janet Ireland, operated on by a very able surgeon, Mr Lizars of Edinburgh, the whole of the diseased mass could not, I believe, be removed from the abdomen; notwithstanding, the patient got well, gathered flesh, and was relieved of her central pains. These considerations are very encouraging, but we must *beware of rashness*, and, above all, we must be careful to select for the operation those cases only in which there is a reasonable hope.

5thly. *The removal of the cancerous womb when the ulceration first makes its appearance.*—To omit the operations performed upon the Continent, as well as those by Dr Weatherell and Mr Banner, the event of Mrs Moulden's case, hereafter detailed, has, it is presumed, clearly proved the possible success of this operation. Without the help of surgery this disease appears to be totally helpless; but of rashness, as before observed, it is necessary to beware.

6thly. *Extirpation of the puerperal uterus.*—When the Cæsarean operation is performed, or when a patient is evidently sinking after rupture of the womb, let it be remembered that the wound formed by the extirpation of womb, and which might probably be much reduced in extent by drawing the parts together with a ligature, would merely take the place of a more formidable wound: that, I mean, formed in the womb by the Cæsarean operation, and which, by the operation here performed, would, together with the uterus, be taken completely out of the body. No operation, perhaps, can be more unpromising—shall I say, more unjustifiable—*in the present state of our knowledge*, but I thought it proper to mention it. From four rabbits I removed the uterus within a few hours after delivery, after having drawn together, by means of ligatures, the parts by which they were connected to the pelvis,—I mean the vagina, broad ligaments, and Fallopian tubes. The mass removed was large enough to fill the hollow of the hand, as the rabbit is multiparous, and has two wombs of great capacity. Of these four rabbits, three, to my great surprise, recovered—the fourth dying from internal hæmorrhagy, in consequence of the detachment of the ligatures, which had been insecurely tied. A practitioner of considerable acuteness, Mr Webber of Yarmouth, informs me that, being called to an inversion of the puerperal uterus, he successfully removed it on the fifteenth day after delivery."

Thus Blundell anticipated—(1), the section of the Fallopian tubes now practised by many after Cæsarean section; (2), the extirpation of the ovaries for dysmenorrhœa and inversions, now known as Battey's operation; (3), Porro's modification of the Cæsarean section. In extirpation of the cancerous uterus he stated at the same time what is exactly the modern standpoint, "The general surgeons would, I presume, of preference remove the parts by incision above the symphysis, and a facility would thus be afforded for ascertaining the state of the abdominal viscera; but I suspect it will be found at last that it is through the outlet of the pelvis that the parts may be removed with the fairest prospect of success."—(Castle's edition of Blundell's *Diseases of Women*, p. 185.)

No one can read Blundell's works without being impressed by his genius and wonderful intuition, and it is remarkable that so little general credit has been given him for his advances. This may have been due to a distrust of speculation unaccompanied by actual statistical results, as well as to an unfitness of the times for such advances. His environment was too much for him. His work on Gynæcology is also distinctly wanting in methods of investigation of disease, and this must have prevented the general acceptance of his views, and hindered the progress of the science. In some respects he reminds one of Lizars of Edinburgh, but Blundell was by far the greater man.

The greatest advance in Gynæcology was made by Sir James Simpson by his invention of the uterine sound and sponge tent. These instruments gave a means of diagnosis and treatment hitherto lacking, and opened up the realm of the pathology of the uterus. His original memoir on the uterine sound is a marvellous piece of work, and gives one a clear idea of the immense stride made by its use. He first points out the means then at the disposal of the specialist for gynæcological diagnosis, viz.,—(1), the state of the uterine functions; (2), the condition of the functions of the immediate viscera; (3), the existence of sympathetic mammary or spinal pains; (4), the condition of the patient's general health. Thus local examination was almost *nil;* but we of the present time are far too apt to forget that the four points so laid down are of very great importance in investigating a case, and are too much neglected for abundant local examination. Then follows his description of the sound and its use in the diagnosis of subinvolution, superinvolution (conditions really discovered by it) in fibroids, etc. It is also marvellous to see how clearly Simpson had grasped the idea of the modern bimanual, as he really describes its use combined with that of the sound most accurately. Indeed, one is tempted to ask, Why Simpson did not see the limitation and danger of the sound, and the much greater value in most points of the bimanual? Such a step was, however, at that time impossible, even to such a giant as Simpson was. Genius is great, but it cannot conquer environment completely, and the time then was not ripe for this step.

This paper gave Gynæcology its first great impetus, and a perusal of it impresses one deeply with Simpson's power.

Looking back on its use from a modern standpoint, we can see that great abuses and dangers resulted from the employment of the sound, and some have urged that its limited use now shows that its original invention was a mistake, and that from its indiscriminate application more harm than good has resulted. We now know its risks, especially since our knowledge of antiseptics, and we have been able to limit its use greatly by the extension of the bimanual, especially when performed under anæsthesia. All this, however, detracts in no way from Simpson's fame. There is an evolution in Science as in Nature, and although the former works, unlike the latter, from the complicated and perhaps dangerous, to the simple and safe, it is none the less apparently a law in our mental processes. One can look at Listerism in this same light.

The perusal of Simpson's many other papers serves to increase our admiration; and his great obstetric work, to say nothing of what he did for anæsthesia, mark him as a giant in this subject—one whose name can never fade nor have its lustre dimmed. He is the only one of whom we can say in Gynæcology, *Magna pars fuit.*

To Sims in America we owe a great advance—the discovery of the Sims' speculum. It may be urged that the use of the speculum dates from the 7th century, when Paulus Ægineta wrote of the dioptra, and that I have ignored Recamier's claims. No one can deny, however, that Sims gave us the best speculum, and the only one of any use for real operative work. The reason of this is evident. Sims observed a natural fact, viz., the dilatation of the vagina in a certain posture, and attained it artificially by the simplest means. This showed his genius—the power of observing a natural phenomenon and imitating it in the simplest way possible. And so it will be of every alleged discovery: it can only live as truth so far as it is based on real fact and in its working follows the natural mechanism. This discovery and his work on vesico-vaginal fistula and prolapsus uteri are, in my opinion, Sims' real claims to be considered one of the great founders of Gynæcology. In some respects, however, he was too much under the influence of the mechanical school. We must now pass on to higher advances, those of abdominal surgery. In this, Simpson[1] and Sims played little or no part, while Blundell could only foresee and advise what neither he nor his contemporaries during his period of active life could practise. The terrible death of the sufferer from cystic ovarian disease stirred the compassion of Keith, Wells, and Atlee, and to the indomitable work of that great trio we owe one of our noblest advances. One admires the courage of these men. They operated in a hostile and even threatening profession, on cases often hopeless from long continuance and many tappings, with many errors clinging to them as their legacy from the past; and yet from their work has come a technique which leaves little to be desired. Keith's share in all this has been great. His development of an asepsis in his operations even prior to Lister's work, and his share in the development of the peritoneal toilette, give him one of the highest places among the pioneers of abdominal work.

---

[1] It must not be forgotten that Simpson fought most nobly and keenly for ovariotomy when most men were against it (*v.* Dr G. W. Balfour's Valedictory, *Ed. Med. Chir. Trans.*, 1883).

The victory won over ovariotomy made the next advance a much easier matter. I refer to the modern operative treatment of diseased uterine appendages, known as Battey's and Tait's operations. For long, gynæcologists ignored tubal disease. They did this in spite of a fair amount of pathological evidence, as one can see from Cruveilhier's Atlas, where tubercular disease was figured (1829); from Boivin and Duges' Plates, which showed hydrosalpinx and probably distended purulent tubes (1833); and, lastly, from Hooper (1832), where pyosalpinx and hydrosalpinx were distinctly figured. In late years much of this was forgotten, and gynæcological text-book writers thought they did their duty sufficiently if they figured Hooper's plate. Inflammatory pelvic disease was classed as either pelvic peritonitis or cellulitis, and the possibility of its being a tubal condition never considered by the vast mass of specialists, if indeed by any. The relation between tubal disease and peritonitis was hardly thought of in this country, and the overwhelming preponderance of inflammatory conditions posterior to the broad ligament alleged to be due to the pouch of Douglas being the deepest part of the peritoneal cavity (in the erect posture!), so that fluid gravitated there, and not as pointing to a tubal origin. The present tendency is to class most pelvic inflammatory swellings as tubal, the usual gynæcological rebound. Despite the pathological evidence already quoted and the great work of Bernutz and Goupil, well worthy of perusal at the present time, with its careful record of tubal distension followed by peritonitis and death (*v.* Meadows' *Translation*, vol. ii. pp. 97–101), nothing was done in the way of rational treatment until Battey, Hegar, and Tait opened a new field of operative work, rescued numberless women from suffering and death, and took away from Gynæcology the opprobrium of hopeless and helpless minor medication of serious disease.

Battey, as is well known, attacked the problem of such cases from the standpoint of theory—wild theory. To establish an artificial menopause was his aim, not to remove pathological organs. Yet none the less should he be denied the highest credit for what he has done. Far away from the great educational centres and opportunities for pathological investigation, he yet clearly saw that certain cases in Gynæcology were allowed to drift on to hopeless invalidism or death, often with nothing but a well-fitting pessary—the usual verbal jingle, as effective as Mrs Partington's mop in an Atlantic storm—to restore comfort and health. Battey, unlike Blundell, had the courage of his theory, and the operations he did and encouraged others to do showed that operative interference was rational and safe in such. Soon the real naked-eye pathological conditions were revealed, and Tait speedily outstripped all in his daring and ability, more especially established the importance of tubal disease, and wrung from present pathology, abundant if tardy proof of its frequent existence. Hegar was also in this advance, and especially in tubercular disease has done great work.

Very much, however, remains to be accomplished under this head. Ultimate results, so difficult to get and requiring immense courage to publish, are not thoroughly known. The exact pathology of tubal and ovarian disease is too little known, and, undoubtedly, there has been much rash and crude work. As in all gynæcological advances, there has been fussy and meddlesome interference with women's appendages, and possibly many tubes and ovaries have been sacrificed that might well have been spared. Still, shrinkage in indications is going on, and no doubt we shall soon settle down to greater precision and a more thorough knowledge of this subject.

I am tempted to consider fully what has been done further in the surgery of the abdomen, especially advances in hepatic and renal surgery; but to take up these would be too great a tax on your patience. For the same reason I must also restrain myself from any remarks on extra-uterine gestation.

So far, then, I have merely touched the mountain-tops of our subject, and laid myself open to the criticism of attributing nearly all the advances in Gynæcology to Anglo-Saxon investigators. I must therefore consider now the outside workers, as well as those of Germany and France.

No one has had more influence for good in gynæcological operative work than Lister. When once the gynæcologist has grasped the idea of the "clean touch," he opens up to himself the realm of safe operative work. Bacteriology has explained what was hitherto inexplicable. Gynæcology at one time had sad experience of such cases as death from peritonitis after the use of the sound, tent, or stem pessary, or after some minor operation such as curetting. We now know what that means—Sepsis. It is Lister's immortal fame to have robbed obstetrics and surgery of their main terror.

France has done much for Gynæcology, and the names of

Dupuytren, Recamier, Koeberlé, Bernutz, Goupil, and Péan are illustrious and famous. No French work has impressed me so much as that of Bernutz and Goupil, with its sound views on treatment, and one is amazed that its influence in this country has not been greater. Yet, I think, France should have done more. Its modern school, as represented in Pozzi's most valuable text-book, shows her, however, now thoroughly abreast of the times.

German gynæcologists, especially of late years, have greatly extended our knowledge, and to their work on cervical and perineal surgery—above all, to the courage and thoroughness with which they are trying to solve the difficult problem of the treatment of uterine cancer—we are immensely indebted. It would be impossible even to enumerate the many illustrious names of which German Gynæcology can at present boast; but among those who are gone I may specially mention Schroeder, whose solid and enduring work has been of the greatest value, and who has founded a noteworthy school of observers. Finally, our German confrères take a leading position in scientific investigation, and their thoroughness and enthusiasm are an example to all.

In this brief sketch I have omitted many names deserving of mention. Ephraim M'Dowell and Nathan Smith, as the pioneers in ovariotomy, deserve all the praise America has lavished on them. To one living American investigator, Emmet, Gynæcology owes much. His observations on lacerations of the cervix are pathological contributions of high value, and although his operation has been frightfully abused by many, this has been done despite his strong protest. Emmet's scientific honesty is one of the glories of American Gynæcology.

So far I have merely taken up the questions of the progress of Gynæcology. Its actual history is quite another matter, so far as congratulation goes. The negative condition of knowledge in Gooch's time soon changed its quantity, and an amount of pernicious dogma and theory was let loose, from the evil effects of which we have not yet rallied. Probably the worst of these schools, as we might term them, was that of the ulcerationists, with their one simple cervical pathological lesion, and its one simple cure. We get the fullest information as to this ulceration of the cervix from J. H. Bennet's work on *Inflammation of the Uterus*. Here Bennet runs riot in the most woeful manner. Every pelvic symptom a woman had was due to ulceration of her cervix: almost every gynæcological patient had it, and there was no rest for her until the cervix had been scarred and cicatrized to a supposed normal condition. I know no more appalling nor ghastly book than Bennet's, nor any epoch in our history we should regard with more shame.

The doctrines of the extreme mechanical school are about as bad. The leading dogma in its faith is that a woman's pelvic health is all a question of the angle her uterus makes with the horizon, or depends on the angular relation between the uterine body and cervix. So simple and exact a matter is feminine comfort. As Bennet's work was the result of Recamier's speculum, so uterine displacements followed the discovery of the sound. One is almost ashamed to say that we now know that ulceration of the cervix does not exist, and has never existed. As to uterine displacements, it is notorious that a fixed position of the uterus was assumed as normal, though in reality the uterus has no fixed position, but rather an extensive range: while certain conditions considered pathological are, in fact, normal. Fortunately now, the current belief as to displacements is that their significance is slight, that few require direct treatment, and that the vast majority are secondary to inflammatory conditions, as Schultze and Emmet have so clearly pointed out. While most have thrown off all this pernicious error, there are still some faults to be guarded against in the magnification of the significance of slight pelvic lesions, and the ignoring of the general constitutional state or neurotic diathesis. One must never forget that certain lesions are the result of normal child-birth, may exist for years without harm, be detected when the patient is below par, and erroneously considered the cause. How many a hard-worked, run-down woman, primarily handicapped with a neurotic constitution and over-weighted with the cares of maternity, is assured that all her troubles are due to a slight displacement or a minor cervical split, and is supposed to be cured by some mechanical nostrum, or by the obliteration of a cervical laceration! But I need not enlarge on a subject so wisely treated by Clifford Allbutt, and whose cure has been clearly indicated by Weir Mitchell. By all means let us give an exact opinion of pelvic lesions when we are consulted, but let us beware of overestimating or underestimating their significance, and ignoring neurosis and neurasthenia.

We see then that Gynæcology started from such a condition as one finds in Gooch—irritable uterus: as instruments for examination were invented or revived we got diseases discovered, generally at first misunderstood, and often a system of pathology based on them alone. Bennet made most diseases secondary to ulceration of the cervix, just as the displacement school explained everything as originating in a version or flexion. What saved Gynæcology mainly was the results derived from abdominal surgery, which showed us the folly of much of the previous work, as well as gave an impetus to exact anatomical and pathological investigation. What lessons, then, are we to draw from the past? But first let us not imagine for one moment that we are above the faults and follies of our predecessors: nay, that we have not fallen into worse. Every age merely changes its craze, and many modern facts in Gynæcology and the other branches of Medicine reveal us as credulous and simple as the mediæval practitioner. We can keep before us, however, the great fact that our knowledge of the nature of any disease depends on our knowledge of the development and anatomy of the organ concerned; on our information as to its functions; and, finally, on what we know of its pathology. How often has a system of elaborate medication been slain by a single fact in anatomy or pathology, and laid as prone and discredited as Goliath! Anatomical, physiological, and pathological research must be the basis of our future advances, and the test applied to all alleged discoveries. "Investigate" must be our motto. One thing further has struck me in Gynæcology, and that is, that our clinical history of disease is not quite crystallized out. This is a point worthy of our most careful attention, and in this respect we have much to learn from pure Surgery and Medicine.

Gynæcology has sprung from Medicine, and has long existed as one of its branches. Gradually it has emancipated itself, and now stands free, undoubtedly, as a branch of Surgery. Yet gynæcologists in our famous Infirmary are still linked with physicians, and do their operative work amongst them. This is unseemly, absolutely unscientific, and should be speedily put right. No general surgeon would tolerate phthisis and skin-disease patients in his ward, and yet to Gynæcology in the leading Medical School of the country half of a physician's ward is allotted. We must undoubtedly leave the physicians, bag and baggage, and establish ourselves as an independent surgical speciality.

Looking back on the past of Gynæcology, we can truly say that it has been a brilliant one, and that the future is still more full of promise. There has been much to be proud of: much, alas! that is humiliating. Yet we are thankful that always in our dark days there have been some faithful to truth and common sense, and who never bowed the knee to Moloch, but were contrariwise abusive to the supposed advances, and therefore helpful to Truth. Let all of us, even the youngest, have a healthy scepticism, and be most doubtful of any truth so evident that it has been accepted without proof.

Our special societies have a value that cannot be overestimated. Every such society should regard itself as a band of workers, or rather builders, whose duty it is, man by man, to contribute each his stone to the growth of its special science. We must resist the temptation to build more than our material warrants, and eschew all attempts to complete our ideas with tricked-out canvas which must soon decay, and be torn down with reproach. It is given to few to make such gigantic contributions as Harvey, Simpson, and Lister, but most can at least add some fact, fill up some gap, and feel that their work, though humble, has been true,

> "One stone the more swung to her place,
> In that dread Temple of Thy Worth."

Part Second.

REVIEWS.

Differences in the Nervous Organization of Man and Woman, Physiological and Pathological. By HARRY CAMPBELL, M.D., B.S. Lond. London: H. K. Lewis: 1891.

MAN and woman being but the male and female of the same animal, it is natural that their nervous organization should be much alike. They have the same capabilities, and share in the same diseases. What differences exist are easily indicated, hence there does not seem to be any need for a book of well-nigh 400 pages upon the difference in the nervous organization of the two sexes. But it is always difficult to know what kind of books are really in request now-a-days. Some people are much occupied in comparing men and women, often to an unhealthy degree. Moreover, a good portion of the book is not covered by the title. The first part is on the evolution of sex, in which, of course, the author treats of many other subjects than that of nervous organization. In this section Dr Campbell reproduces the views of Darwin, Spencer, Weissman, Geddes, and others; loose speculations about pangenesis, panmixia, katabolism, somatogenetic heredity, and qualities transmitted from mothers to daughters, and from fathers to sons, in which assumption often outruns proof.

In Part II. Dr Campbell deals with the pathological application of the conclusions laid down. We have a chapter on the comparative liability of men and women to gross lesions of the nervous system, and another on the important functional nervous disorders in the two sexes. It is curious to note that chorea and whooping-cough are more frequent in girls, and hydrocephalus and laryngismus stridulus in boys, but our author's laboured attempts to give a practical or philosophical application to such facts are too loose to make much impression on the reader's mind. Some writers of books quote other authors to supply facts; others quote them to supply opinions and explanations of facts. Dr Campbell indulges so much in the latter practice that he gives himself the air of wanting originality, which, on the whole, is not the case.

Sometimes the author's views seem to be undecided. He tells us that woman is undeveloped man; that women are destitute of originality; that women, though more resembling children, evolve their faculties at an earlier age; and then he surprises us with the statement that "it is only when we pass into the region of genius that we see the intellectual disparity of the two sexes unmistakably revealed; genius of the highest order is practically limited to the male sex." Dr Campbell farther explains that a genius is an extreme natural variation, and natural variations are more common and pronounced in the male than in the female. Thus more men are born geniuses, and more men born idiots than women. Our author does not define what he means by genius; but when he calls it something abnormal, he is apparently thinking of poets and artists. Genius may be called something abnormal in the sense of something extraordinary, but not something unhealthy or pathological like idiocy. Shakespeare's genius lay in his deep insight into human nature, in his great power of dramatic conception, and in his sense of the beautiful, and power of language. Those who enjoy his works have these qualities also, but in less intense and active degree.

One might here expect some comparison between the male and female brain; but here Dr Campbell is not too rich in details. He quotes the observation of Tiedemann, that the female human brain is in comparison with the size of the body even larger than the male brain; but Broca and Boyd have stated that the female brain is smaller than the male brain, even when the lesser size of the body is taken into consideration. Our author makes no mention of Dr Boyd's observations, nor does he say anything about the shape of the head in men and women, nor the comparative size of the different lobes of the brain. Does Dr Campbell seriously hold that, putting a few artists and poets apart, women are superior to men in mental power? But if women have as good faculties, and evolve these faculties at an earlier age, and live longer than men retaining these faculties, this amounts to a virtual score of superiority for the female sex. If Dr Campbell does not assent to this, we should recommend him to rewrite the passages referred to.

In the third part, entitled "Psycho-physiological," which occupies 96 pages, Dr Campbell gives us a disquisition on the feelings, the intellect, and the will. But as the mental qualities of men and women do not demand a separate analysis, this section has little to do with the differences in their nervous system, though the author now and then calls attention to the difference in quality which mark the mental and moral qualities of the two sexes. His essay is a clearly written presentation of the views of some well-known writers of the day, such as Spencer, Bain, and Maudsley, whom he largely quotes. Now and then Dr Campbell imitates the methods of the evolutionists, to help on their theory; for example, he ascribes what he calls the superior "clannishness" of men to their habits through long ages of banding together for purposes of common defence. This is an easy play, and can be used or neglected as the writer chooses. As an instance of the latter, we might take the author's assertion that women generally bear pain better than men. We have seen this often repeated, and no one thinks it worth his while to contradict it; but following Dr Campbell's method, we should say it ought not to be true. Men have for ages been accustomed to take the rough side of things, hence they are more exposed to many kinds of pain than women. Why, then, do they not acquire a greater capability of bearing it? Throughout the book we have traced the assumption that the mental qualities of the father generally descend to the son, and those of the mother to the daughter. We should say that the mental qualities of the parents are shared by both in varying and often indefinite proportions. The hardiness of a warlike race, for example, would be shared by the women as well as by the men, just as an increase of stature would be shared by both sexes in a proportional degree.

The most instructive passages in the book are those where Dr Campbell brings his experience as a physician to illustrate the views adopted by him. The book is evidently the product of much thought, careful observation, and extensive reading.

The Practice of Hypnotic Suggestion. By George C. Kingsbury, M.A., M.D. Nine Illustrations. Bristol: John Wright & Co.: 1891.

It is not surprising that, with all the interest which has been excited in hypnotism during the past year or so, books on the subject should multiply rapidly; and it is well that it should be so, because, now that the subject is no longer tabooed, the wider the interest aroused in it the sooner shall we be able to come to a definite conclusion as to the justice or otherwise of the claims of hypnotism to a definite recognition as a therapeutic agent. Dr Kingsbury writes this little volume to meet the demand of anxious inquirers. "It has no pretension to do more than acquaint its readers with the *rudiments of practical therapeutic hypnotism,* and to warn them against its dangers and difficulties." The theory of the subject and its history are not dealt with. On the whole, this book is perhaps the best which has been published in the English language for the general practitioner. The author has selected his matter carefully, and his directions and suggestions are both concise and clear. It is of advantage that in many cases Dr Kingsbury confesses that he has not practised hypnotism sufficiently long to give any decided opinion upon many disputed points or obscure and little understood facts; but we think that in some instances he might have been more definite.

We are glad to see that our author is prepared to allow that all nations are very much alike with regard to general susceptibility to hypnotic suggestion—Orientals being, however, possibly the most deeply influenced. This is an important point, and one frequently forgotten. Hypnotism as used for therapeutical purposes rarely requires that the patient should become somnambulistic. The various methods of producing hypnosis are briefly given; but we think that the method by the fixed gaze should be coupled with the warning that it is more apt to produce untoward consequences than almost any of the others, and that the Nancy or Amsterdam methods should be given a fair trial before any others are attempted. We are surprised to find that Luys' revolving mirror does not meet with

Dr Kingsbury's approval, and that he finds it very uncertain, and liable to produce giddiness, headache, and palpitation. This is the reverse of our experience, and we have known the mirror to succeed where all other methods have failed.

The chapter on the objections to hypnotism is clear, and should be a warning to practitioners who would have the practice of hypnotism stand or fall upon one experiment or upon book knowledge alone. The general conclusions which our author comes to seem to be moderately stated and quite within the mark; and we thoroughly agree with him in his desire that all persons practising hypnotism should err upon the safe side, and claim too little rather than too much. Had this been the case in Braid's time, a valuable therapeutic agent would not have come into disrepute.

A Treatise on Rheumatism and Rheumatoid Arthritis. By ARCHIBALD E. GARROD, M.A., M.D. Oxon., M.R.C.P., Assistant Physician to the West London Hospital. London: Charles Griffin & Company: 1890.

THE work before us is a painstaking attempt to give a good picture of our present knowledge of rheumatism—to present the facts and weigh the opinions generally current in our own time—and in this the author has been extremely successful. The pathology, ætiology, symptomatology, and treatment of the different rheumatic manifestations are discussed with evident care, and from the tone of the volume it is obvious that Dr Garrod has approached his subject with a mind free from any preconception.

The author modestly states in his preface that he has felt he might be doing a service to medical science if he "endeavoured to present a consistent picture of rheumatism as a systemic disease, of which the articular lesions are, at the same time, the most pregnant and conspicuous manifestations, but which also implicates many other structures and tissues of the body, and assumes widely different forms in different cases." This conception is admirably developed in the second chapter of the work on the "Province of Rheumatism," and the entire argument shows the careful reasoning of a judicial mind.

In regard to the pathology of rheumatism, the author fully discusses the different nervous, chemical, neuro-chemical, and infective theories of rheumatism. This section of the book is characterised by the same dispassionate criticism, as we have remarked upon, of the different views that have been held, and we can fully endorse his conclusion that no theory is so satisfactory as that which attributes the varied phenomena of the disease to infection from without.

The work is a mine of wealth in respect of the elaborately collated statistics as to rheumatic cardiac affections. These are drawn from the best authorities, and will prove of the greatest use to future observers.

It is impossible, with the limited space at our disposal, to follow the author through the various chapters of his book. If it were within our power, we would gladly make some remarks upon his observations in regard to the different manifestations of rheumatism, and his criticism of its treatment by various methods. It would further be a pleasure to pass in review his chapters on Rheumatoid Arthritis, if we had space to do so, but we must refrain.

The perusal of this work has been attended by unalloyed satisfaction. The author has approached his subject with a mind at once richly informed and perfectly unprejudiced, and the result is, as might be expected, in every way matter for congratulation. We do not think we go too far when we conclude this short notice by saying, that the work is worthy of the son of Alfred Garrod.

A Dictionary of Practical Medicine. By various Writers, edited by JAMES KINGSTON FOWLER, M.A., M.D., Fellow of the Royal College of Physicians; Senior Assistant Physician to the Middlesex Hospital. London: J. & A. Churchill, 1890.

THIS very concise and most useful volume has been a source of great pleasure to us. Containing, as it does, in its list of contributors a large number of names familiar throughout the entire civilized world, a high standard is of necessity expected from the various authors. It is a satisfaction to be able to say that the standard of writing is at a high level, but as is inevitable in a work produced by the co-operation of many authors, it is uneven. In the main, however, the articles are singularly free from blemishes, and the entire work is excellent, not merely in regard of matter, but of manner as well. In handling the various subjects the authors have, in every instance, so far as we have been able to discover, presented a thoroughly modern view of the nature and cause of the disease in question; and, what will be found of great utility to the practitioner in search of light on his therapeutic path, the matter of treatment, so often curtly dismissed as barely worthy of any notice, is fully discussed. The style of almost all the contributions is pleasing, thus rendering their perusal at once easy and agreeable.

One point deserves special mention as being of particular use—the discussion, from a diagnostic point of view, of individual symptoms. As examples, we may refer to the articles on pupil changes and vomiting. These are not cited in any invidious spirit, but simply as having been, for certain reasons, more under our notice, and they are only spoken of as types of what may be found in regard to many other special symptoms.

In conclusion, we desire to offer our warm congratulations to the editor, who has done a real service to the busy practitioner. So far as we can judge, and we have been at pains to do so, the work is at once perfectly reliable and extremely readable. We feel sure that it will achieve a great success, and certainly it will do this if its reception is as warm as we hope.

A Practical Treatise on Diseases of the Skin. By HENRY G. PIFFARD, A.M., M.D., Clinical Professor of Dermatology, University of the City of New York, etc., assisted by ROBERT M. FULLER, M.D. With 50 Full-page Original Plates, and 33 Illustrations in the Text. London : H. K. Lewis : 1891.

SELDOM has the art of photography been applied with more success to the portraiture of diseased conditions than in the handsome volume before us, which is at once an Atlas of Skin Diseases and an original and able, if somewhat condensed, description of their symptoms and treatment. Regarded as an atlas, for this constitutes its most prominent feature, it contains upwards of fifty reproductions from photographs, besides a large number of illustrations, in black and white, in the text. The photographs from which the plates were prepared were made by the author with the aid of artificial light, which his experience led him to prefer for this purpose to ordinary daylight; the result has been eminently satisfactory. Some time since an atlas was published in America by Dr Fox, in which the assistance of tinting was employed to impart a more lifelike aspect; here no such meretricious help has been had recourse to, the strength as well as the weakness of photography as applied to dermatology has been allowed full scope, and the strength predominates. In many cases we do not miss the effect of colour; indeed, the likeness could hardly be improved by its addition. Thus the representations in the large plates of eczema, psoriasis, leprosy, sarcoma, fibroma, elephantiasis, seborrhœa kerativa, acne, leucoderma, scabies, erythema, zoster, ichthyosis, and alopecia areata are quite unmistakable, as the affections enumerated lend themselves peculiarly to reproduction in monochrome. In these, too, the free use of a lens enables the distinctive characters to come more fully into prominence. But tinea versicolor, morphœa, rosacea, and lupus are less satisfactory, though why this should be so is not so evident, since that peculiar disease, called by some seborrhœa, by others lichen marginatus, and yet again by the author sudolorrhœa, comes out in the plate devoted to it with marvellous exactness. The want of colour is a great loss in the example of Paget's disease of the nipple or mammilitis maligna, and in that of so-called psorospermosis, neither of which would prove of much use as they are to the inexperienced observer. The figures in the text are of varying excellence, and present the drawback that in their case amplification by means of a lens merely exaggerates their deficiencies; but many of these also are perfectly typical. The descriptions of the various disorders are expressed in terse and well-chosen language; and if, perhaps, at times brevity has been sought to the exclusion of adequacy of specification, there are few, if any, opinions enunciated with which we feel in the least disposed to cavil. We observe that the parasite of tinea versicolor is stated to be the microsporon audouini, though its discovery is usually attributed to Eichstedt. We are not satisfied either if the ultimate termination of tinea tonsurans capitis in children when left to itself is baldness. Indeed, baldness, if it ever succeeds ringworm of the head, is certainly much more frequently due to the remedies-employed than to the complaint itself. Throughout the work some original and novel methods of treatment will be found recommended, most of which are unfamiliar as yet in this country, but have been proved of value in the author's practice. For details of these we must refer our readers to the book itself. Altogether this work is one well worthy of Dr Piffard's high reputation; it is published at a most reasonable price, when one takes into account the wealth of illustration which it contains; and to those who possess themselves of it, its careful study will undoubtedly serve to render easier the recognition of numerous forms of cutaneous maladies.

Researches on Micro-Organisms. By A. B. GRIFFITHS, Ph.D., F.R.S.E., F.C.S. Illustrated with 52 Figures. London: Baillière, Tindall, & Cox: 1891.

THE author of this work says modestly in his preface that "it does not profess to be a treatise on, or manual of bacteriology, but an *exposé* of recent researches in various branches of the subject, especially where such researches throw light on the pathology, therapeutics, etc., of infectious diseases." The book is evidently the production of a chemical expert well acquainted with the mass of literature of home and foreign origin pertaining to the subject, and certainly the most interesting and instructive chapters of the book are those dealing with bacteriology from its chemical side. His therapeutics are, however, less trustworthy than his chemistry; when pathogenic organisms have invaded living tissues and organs they are not so easily destroyed or rendered harmless as they can be in test-tubes: the favourable opinions expressed in the book with regard to several drugs and modes of treatment—in phthisis, for instance—although supported by an appendix of letters from a consumptive who had tried many of them, will not meet with ready acquiescence or approval from those who have had long and extensive acquaintance with that disease. At all times, but especially so in the present day and generation, *post hoc* has been confounded with *propter hoc*, and indeed much modesty and much experience are needed, but often wanting, to differentiate the two, and say what is the genuine clinical truth.

Chapters IV., V., VI., and VII., treating of the distribution of microbes in soil, water, and air; the chemistry of the ptomaines, leucomaines, and extractives, "the *x*, *y*, *z's* of morbid anatomy and pathology;" soluble ferments, and the various substances formed by micro-organisms during their lifetime, are all exceedingly good, and teem with facts of a most important nature.

Chapter VIII. deals with the action of heat, light, gases, etc., on microbes, and contains an account of the author's experiments with many of them, among others the bacillus of tubercle. Immunity and vaccination are treated of in Chapter IX., and the methods employed for obtaining an attenuated virus suitable for protective inoculation are considered. In this connexion the author seems to have full confidence in the Pasteurian methods of treating rabies. Chapter X. gives a very full account of germicides and anti-parasitic therapeutics. Chapter XI. gives in outline the biology of many pathogenic organisms, and among them one, *Bacterium alii*, discovered by the author in 1887 in the slime of alliaceous plants. Chapter XII. is chiefly devoted to the treatment of phthisis. It tells of Bergeon and sulphuretted hydrogen, of Kolischer and hypodermic injections of calcium phosphoricum, of Ball and eucalyptus oil, and of Weigert and superheated air (why not the Turkish bath?), and of the author's own method by *natural* salicylic acid subcutaneously injected. On page 315 it is stated that although "only a small quantity of the acid gets into the blood by the hypodermic injection method, yet it is capable of destroying the bacilli, as proved by their diminished number in the sputa, etc., also by the general improvement and ultimate cure of the patients under treatment." Such is a sufficient specimen of the exiguous foundations upon which the meretricious curative reputation of many a drug is reared.

Containing as it does a mass of facts relating to the rôle played by bacteria in chemical and morbid processes, the book is deserving of warm recognition; it is nicely printed on nice paper, and is altogether got up in excellent style.

Practical Manual of Diseases of Women and Uterine Therapeutics. By H. MACNAUGHTON JONES, M.D., M.Ch., F.R.C.S. I. and E., formerly University Professor of Midwifery and Diseases of Women and Children in the Queen's University, etc. London: Baillière, Tindall, & Cox: 1891.

DR MACNAUGHTON JONES' Manual of the Diseases of Women must be regarded as one of the successful text-books on this ever-growing subject. It has reached its fifth edition, is well arranged, and the information it contains has been kept well abreast of the recent advances in gynæcology. There is a special chapter on Massage, and another on Home and Foreign Spas specially suitable for diseases of women. Some exception may be taken to the large space devoted to gynæcological electro-therapeutics; and it is to be feared that the great number of instruments (pessaries, specula, etc.) figured may prove confusing to the student; but Dr Jones' book is, nevertheless, one of the best of the text-books of gynæcology.

Geburtshülfliche Taschen-Phantome. Dr med. K. SHIBATA. Munich: J. F. Lehmann: 1891.

DR SHIBATA, a Japanese specialist in Gynæcology and Midwifery, has invented an obstetrical pocket "phantom," and Professor Winckel of Munich has written a preface to the booklet which contains the models. There are two cardboard representations of the infant, each with movable limbs and head, and one cardboard model of the female pelvis. One of the infants is to be used for demonstrating the presentations and positions in which the long axis of the fœtus lies parallel to the long axis of the uterus, and the other for the transverse cases.

Dr Shibata contributes a short historical sketch of the various obstetrical phantoms which have been invented, commencing with that of Van Hoorn (1697), and ending with that of Winckel. The author's models are intended for the use of the student, to whom the large and expensive phantoms are inaccessible, and for such a purpose these little inventions are well suited.

Report on the Influenza Epidemic of 1889-90. By Dr PARSONS. Maps and Diagrams. London: Printed for Her Majesty's Stationery Office by Eyre & Spottiswood: 1891.

ALL medical practitioners who are interested in influenza—and who is not?—will do well to study carefully Dr Parsons' Report to the Local Government Board upon the Influenza Epidemic of 1889-90. It deals with the epidemic in our own country, and also in considerable detail with the behaviour of the epidemic elsewhere. As Dr Buchanan says in his introduction to the Report, it will be disappointing to those expecting to glean from it the source of influenza; but it amply proves that the disease is eminently infectious communicated from one individual to another, and also that there are other and less direct ways by which the infection of the disease may travel, and in which it may be retained for a time in suspended activity.

A Guide to Therapeutics. By ROBERT FARQUHARSON, M.P., M.D., F.R.C.P.L., LL.D., late Lecturer on Materia Medica at St Mary's Hospital Medical School, etc. Fifth Edition. London: Smith, Elder & Co.: 1891.

WE have on previous occasions spoken favourably of Dr Farquharson's work. The present edition includes the "Additions" made to the B. P. last December. There is also a new section on

Diet, which adds much to the value of the book. In this *Guide to Therapeutics* the physiological actions and therapeutic uses are placed in parallel columns, a plan which has much to recommend it. We are glad to see that Dr Farquharson—although devoting himself principally to politics—has still leisure to keep up his knowledge of therapeutics, and to present his valuable work well abreast of the times. We have much pleasure in recommending the work to both practitioners and students.

Minor Surgery and Bandaging, with an Appendix on Venereal Diseases; arranged in the form of Questions and Answers. By EDWARD MARTIN, A.M., M.D., Instructor in Operative Surgery, University of Pennsylvania. London: H. K. Lewis: 1891.

THE title of this little book suffices to indicate its scope and pretensions. Many of the terms used differ from those commonly employed by English surgeons, and would tend to confuse the student. We read, for example, of "the Velpeau," "the Barton," and "the Désault bandage;" of the square knot instead of the reef knot. The following remarks on the administration of chloroform are worthy of reproduction:—"Sudden death *frequently* occurs as a result of its inhalation, from cardiac or respiratory arrest, and without premonitory symptoms." In giving it, "not more than *one drachm* of chloroform is poured upon a towel, and the latter is held close to the mouth." Although in some respects well written and fairly illustrated, we do not anticipate that the book will find much acceptance—at any rate in this country.

On the Results of Treatment of Simple Fractures of the Shaft of the Femur. By STEPHEN SMITH of New York. *Phil. Med. News*, September 26, 1891.

The Treatment of Fractures of the Humerus involving the Elbow-joint. By LEWIS A. STIMSON, M.D., of New York City. *Phil. Med. News*, October 3, 1891.

THESE two papers are of extreme value and interest. Seldom has any weekly journal in this generation given the practical surgeon such a treat in two consecutive numbers. Both papers are by men of eminence in Surgery. Both are on subjects of the most common, trite, and everyday character, regarding which volumes have been written before, and doubtless volumes will be written again. Their value lies in the brave honesty with which these eminent writers face the question, that in both these common and trivial kinds of accident perfect recovery is not to be expected. How many a country doctor and hospital surgeon has been worried and depressed because with all his efforts he cannot get an oblique fracture of the femur to mend without some shortening. How many of us, against our better judgment, half-blame ourselves if after a fracture of the condyle into the elbow-joint movement is not absolutely perfect. These excellent papers put with knowledge and dignity our position, that an absolutely successful treatment of an oblique fracture of femur may mean stiffness of movement for a year and shortening to an inch, and that in an intracapsular elbow-joint fracture the very best and most prolonged treatment may in some cases result in a quite distinct amount of interference with movement of joint. Both distinguished surgeons discourse well and wisely on the treatment; and we must all aim at as near perfection as possible. But we must let our patients and the public clearly understand that we are not dealing with machines of wood and iron that can be morticed or tugged to perfection, but with soft living flesh and blood, apt to inflame, to chafe, and stiffen. In lands where actions for damages against the surgeon are common, such teaching is invaluable; even here, where patients are reasonable, we are none the worse for being reminded *ex cathedrâ* that neither ourselves nor our neighbours should be blamed without reason.

The Asclepiad: a Book of Original Research and Observation in the Science, Art, and Literature of Medicine, Preventive and Curative. Second Series. Third Quarter, 1891. No. 31.

THIS number is even more full than usual of interesting and important matter. A charming life of that most interesting man and successful physician, Matthew Baillie, reminds us in many points of our lamented Warburton Begbie. Both possessed that inscrutable secret of success, both eventually by force of circumstances exchanged the teacher's chair for the physician's chariot, and both impressed their cotemporaries with love and admiration, and a feeling that in each case death would deal an irreparable blow. Both loved to help others, and especially the young; both were foolish, almost criminal, in overwork for others and neglect of self. Baillie was an old man at fifty, and though he survived till he was sixty-two, was a done man for years before that time.

One of the most interesting of the Opuscula Practica in this number describes in few words the physical action of certain odours on the nervous centres, and suggests an interesting field for physiological inquiry on the relation of odour to memory, or rather to that part of memory we call recall from association. Dr Richardson has a kind word of sympathy for those unhappy folk, both men and women, to whom the odour of tobacco is loathsome. Would it were possible to drive it into the callous heads and cold hearts of the many that their selfish use of tobacco in rooms, carriages, at meals, indeed everywhere, may really poison every innocent enjoyment of their weak but inoffensive neighbours who don't smoke, and whose wine is tainted, whose heads are dazed, and circulation depressed by vile clouds of smoke which their happier friends pretend to enjoy. To all such we recommend this number of the *Asclepiad.*

Lyra Heroica: a Book of Verse for Boys. Selected and Arranged by William Ernest Henley. London: Published by David Nutt in the Strand: 1892.

Medicus sum, ideoque nihil heroicum a me alienum puto. This must be our excuse for saying a warm sentence of admiration of this delightful book. If you want to make your son a hero, tell him of heroes; and in this beautifully printed little volume Mr Henley has exercised his great gift of the critical faculty, and utilized his wide reading by putting together a selection of verse out of English literature of the last 300 years. Beginning with Shakespeare and ending with Rudyard Kipling, he has given the boys the fine flower of heroic play, song, and ballad. From Agincourt to Afghanistan, by Flodden, Kinmont Willie, Fair Helen, Mary Morison, and the Crimea, he has mixed songs of battle, of love, constancy, and patriotism so well that even those who are boys no longer may be stirred and heartened.

Professional Atmosphere and Morals; or, Patents and Secrets v. *the Liberal Professions.* By Horatio C. Meriam, D.M.D., Harvard University Dental School.

It is satisfactory to find a paper of this kind, as showing the spirit prevalent among the members of a specialty so recently elevated to its proper position as a legitimate branch of General Surgery. It would be well if the sentiments expressed by the author were adopted more than they are, not only by the dental, but by the medical profession. Patent medicines, secret remedies, and the like are altogether inconsistent with the calling of a physician or surgeon. In the words of a quotation given by the author, there is "a common attribute of good physicians and surgeons, which has had great effect to elevate and liberalize their profession, I mean their characteristic zeal for *teaching.* This zeal is manifested not only in giving direct instruction to medical students, but in imparting to medical societies and the public every important fact observed, every useful practice invented, and every suggestive opinion or promising theory conceived. The constant desire and purpose of its members to teach, to impart to all any peculiar knowledge which each may acquire, is one of the principal distinctions between a liberal profession and a trade." Nothing could be more to the point at the present day than the opinions contained in these words. Patents may be damaging to the dignity of a learned profession, but secret remedies, occult methods of cure pretended to be known only to the practitioner, are worse. No one denies the efficacy of certain patent medicines, of which we do not know the composition. This is, and indeed is the only argument brought forward in support of the practice of this species of quackery. But it is the spirit of such procedure with which the medical profession has to deal. Ninety-nine out of a hundred of such remedies may be useless or worse than useless, and the permission to employ the exceptional article, depending on the amount paid the patentee, is simply odious where health and disease, life and death, are concerned.

It is greatly to the credit of the dental department, now affiliated as a legitimate sectional branch of Surgery, that among the other great advancements made by it, such a well-timed address as that under notice should have been delivered before the New York Odontological Society at the Academy of Medicine there; and although such matters come less frequently under observation in this country, there is still a lurking tendency to their increase which it is desirable in every way to discourage.

Part Third.

MEETINGS OF SOCIETIES.

ROYAL MEDICAL SOCIETY.

The 155th session of the Royal Medical Society was opened on the evening of Friday, 23rd October, by William M'Ewen, Esq., LL.D., of Glasgow, who delivered the Inaugural Address before an appreciative and enthusiastic audience, which filled the hall of the Society to overflowing. Dr R. D. Rudolph, the senior President, occupied the chair, and introduced Dr M'Ewen, who thanked the Presidents for inviting him to address the Society, and the Society for having, some years ago, conferred on him the diploma of Honorary Member. After paying a high compliment to the character and training of Edinburgh medical graduates, many of whom had worked under him as house-surgeons, he proceeded to discuss some points with regard to the venous system within the cranium, and pointing out certain physical and anatomical differences between the intra- and extra-cranial veins, he formulated a theory to explain the mechanism whereby the brain is protected from frequent and sudden alterations in its vascular supply during respiration.

He then passed on to discuss the duties and aims of a scientist, and the spirit in which he should approach his work. He said that if any of his audience had chosen the profession of Medicine as a means of amassing a fortune, he had made a great mistake, as the time, talent, and energy expended would, if applied to any mercantile pursuit, certainly yield much greater results. Next, he showed that *fame* should not be the goal of the scientist, as such an object encouraged hastily-formed and ill-considered conclusions being put forward as established facts, with a view to enhancing the reputation of their author rather than advancing the truth. Such errors will inevitably be exposed sooner or later, and not only detract from the value of the subsequent work of their originator, but do much to hinder the progress of science.

The only legitimate aim for the man of science is the elucidation of truth, and this object must be pursued against all opposition, obloquy, and even poverty; and if it be attained it will be its own reward. Dr M'Ewen came to Edinburgh with a great reputation, and his address was in every way worthy of him.

Dr Rudolf proposed a vote of thanks to Dr M'Ewen, which was seconded by Professor Chiene, who paid a high tribute to the lecturer. The early part of the address reminded him of nothing so much as the work of Goodsir. He had long held that Surgery was simply common sense applied to Anatomy and Physiology, and Dr M'Ewen, one of the foremost surgeons of the day, had given a brilliant demonstration of the truth of this dictum. He also spoke highly of the advantages the Society offers to students of Medicine.

The following gentlemen have been elected office-bearers for the session:—*Presidents*, Alexander Miles, M.D., F.R.C.S. (senior); R. J. A. Berry, M.B., C.M., L.R.C.S.; Gerald Fitzgerald, M.B., C.M.; E. B. Fuller, M.B., C.M., L.R.C.S. *Secretaries*, Messrs A. N. S. Carmichael and R. P. Cockburn, M.B., C.M. *Chairman of Finance Committee*, Mr D. C. Bremner. *Curator of Library*, Mr Lim Boon Keng. *Curator of Museum*, Mr J. R. Higson. *Editor of Transactions*, A. B. Giles, M.B., C.M.

Oct. 30.—Dr Miles in the Chair. *Mr Lim Boon Keng* read his dissertation on "The Influence of the Nervous System on Metabolism." Having defined metabolism as the "sum-total of the chemical changes which take place in living tissues," he described the essential conditions of the process, and the influence of the nervous system upon it. To explain this point, he dealt at some length with the evolution of the nervous mechanism, showing that in its simplest form, the myo-epithelial cell of *hydra*, the muscular system was merely an appendage of the nervous system, and depended on it for nutriment. From this he inferred that muscles and glands may be regarded as end organs, and under nervous influence. He then reviewed the evidences of experimental physiology and psychology with regard to trophic influence, and concluded with a summary of the pathology of trophic lesions. Altogether the paper was a most able one, and reflected great credit on the writer, who showed not only an immense capacity for collecting the opinions of others, but of critically examining these, and forming his opinions regarding them. Drs Fitzgerald and Miles and Mr Hutchison took part in the discussion which followed.

Nov. 6.—Dr Berry in the Chair. *Dr Miles*, as the Senior President, delivered his Address, in which he first pointed out the necessity for personal observation as the basis of scientific work, and then proceeded to review the life and work of Charles Darwin, who, he said, fulfilled the conditions of an ideal scientist, as defined by Dr M'Ewen in his inaugural address:—One who worked neither for gold nor fame, but for the love of truth. He also alluded to Darwin's connexion with the Society,—first, as an Ordinary Member, and again when, in later life, he was elected an Honorary Member, of which he has left it on record that he esteemed this among the highest of his many honours.

Dr Fitzgerald then read his dissertation on "Epilepsy." After briefly describing the leading features of the disease, he proceeded to discuss its seat, which, he held, might be either in the cerebral cortex or basal ganglia. As regards the nature of epilepsy, Dr Fitzgerald favoured the view which attributes it to an excessive production of energy, as against the theory of defective inhibition held by Dr Gowers. In illustrating this opinion, he made several novel and interesting suggestions to account for loss of consciousness and other phenomena of epilepsy, and also to account for an increase of reflexes, when the path of the nerve impulse to the brain was cut off.

The paper, which was a highly suggestive one, and received with great interest, was then subjected to considerable criticism,—Drs Fuller, Cockburn, and Giles, and Messrs D. C. Watson, Keng, Murray-Leslie, Hutchison, Fothergill, Fowler, Donald, and Wallace, taking part in the discussion.

Nov. 13.—Dr Fitzgerald in the Chair. *Dr Berry* delivered his Presidential Address. In speaking of the study of Medicine, he reminded the Society that disease has not that personality which we are prone to attribute to it, and that the patient as well as the disease must be studied. He also spoke of the tendency to defective observation, and showed that often the inability to remember facts depended on imperfect observation in the first instance. Suggestions, on these lines, were also made for the cultivation of memory and habits of accurate observation.

Dr Miles then read his dissertation on the "Mechanism of Cerebral Concussion." Having briefly disposed of the older views on the subject, he announced his belief, that concussion depended on anæmia of the brain, produced reflexly by stimulation in the region of the restiform bodies. He followed the teaching of Duret, in believing that this stimulation was effected by means of a wave set up in the cerebro-spinal fluid, but he attached greater importance than that observer to this factor in the production of injury to the brain. The remainder of the paper was occupied in describing the mechanism of head injuries on this hypothesis, and was illustrated by the results of numerous experiments on animals performed by the writer, which supported his views in a very striking manner.

The paper, which was received with great applause, gave evidence of most careful original investigation, both clinical and experimental.

Drs A. L. Turner, Crerar, and Fuller, Messrs Keng, Hutchison, F. Hearder, Wallace, and D. C. Watson, took part in the discussion which followed.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

THE TREATMENT OF ILEUS.—Dr Aufrecht of Magdeburg discusses in the *Therapeutische Monatshefte* the treatment of ileus. He thinks the washing out of the stomach, recommended by Kussmaul, a valuable addition to our therapeutic resources. The first and more important indication for washing out the stomach is prominence of the organ itself when vomiting is not present or is suddenly arrested, a circumstance which occurs in about a fifth of all the cases of ileus. He explains the sudden arrest or entire absence of vomiting, when the stomach is at the same time distended, by a slight dislocation, caused by the distended intestine, which forces the œsophagus against the margin of the foramen in the diaphragm, through which it passes. An introduction of the sound will give the best justification for such a view. The sound finds no impediment in the œsophagus, and immediately it reaches the stomach a surprisingly large quantity of liquid escapes. Dr Aufrecht even contends that in some cases all symptoms improve by the mere introduction of the sound, and without washing out the organ. Another indication for washing out the stomach is stercoraceous vomiting. In such cases repeated washing out will remove the abnormal contents of the stomach, and prevent them from doing further damage locally or by absorption. He also insists on the hypodermic administration of morphia in all cases of ileus. This treatment keeps the patient almost free from pain, which proves that peristaltic movements proceed quite normally. He is against all internal administration of opium or morphia, as their effect is not prompt when so administered, and because in the case of vomiting it is impossible to say how much of the drugs has been retained. Dr Aufrecht has also long since ceased to administer large enemata, which in his opinion could only be of any use during the first few days of the disease. He punctured the gut twice in the year 1873, with very unsatisfactory results; the punctured coil collapsed, but no considerable evacuation of gases took place, and one of the two succumbed from peritonitis, which appeared to have been produced by the puncture. —*The Lancet*, October 24, 1891.

Injections of Nitro-glycerine for Poisoning by Illuminating Gas.—In the *Répertoire de Pharmacie* for August 10, 1891, reference is made to a case reported by Dr Hoffmann of an actress to whom the author was summoned, and in whom he found the face pale, the extremities cold, foam on the mouth, pulse filiform and intermittent, respiration superficial and slow, and the cornea insensitive. It was determined that inhalation of illuminating gas was the cause of this serious condition, and, injections of ether producing no improvement, Dr Hoffmann injected $\frac{1}{64}$ grain of nitroglycerine into the præcordial region, whereupon prompt improvement took place, and the patient recovered.—*Therapeutic Gazette*, October 1891.

Influence of Antipyrin on the Secretion of Milk.—Dr Guibert writes in the *Lyon Médical* for August 9, 1891, that antipyrin renders marked service in cases where it is necessary to arrest the secretion of milk from newly delivered females, provided the kidneys be normal. He states that, generally, it suffices to administer thirty grains of antipyrin daily for two days, in order to obtain the desired effect. He gives the remedy in capsules of four grains each, one to be taken every two hours.—*Therapeutic Gazette*, October 1891.

For Warts on the Skin.—H. Roemer, of Henfield, Austria, writes to the *Pharmaceutische Post* that he has frequently used, and always with success, the fresh flowers of Verbascum phlomoides and of Verbascum thapsus (mullein) against warts. The flowers, freshly torn from the calyx, are pressed upon the wart with the fingers, and finally rubbed smartly. The procedure should be repeated if one or two rubbings do not suffice. In the great majority of cases one rubbing suffices (*National Druggist*, September 15, 1891). —*Therapeutic Gazette*, October 1891.

The Hypnotic Action of the Antipyretics.—In the *Deutsche Medizinal Zeitung* for June 5, 1891, Professor Bernheim calls attention to the great similarity in action of the so-called antipyretics—quinine, salicylic acid, antipyrin, antifebrin, phenacetin, etc.—not only in their antithermic, but also in their hypnotic action. When the favourable action of salicylic acid in rheumatism was first observed, it was designated as a specific for this affection, but experience has taught that the other antithermic remedies produce a favourable effect likewise in the same manner—that is, they diminish articular pain without influencing the course of morbid processes itself. According to Bernheim, the connexion between antithermic and analgesic action is the following:—Fever originates through the absorption into the blood of pyrogenic substances, which act as stimulants to the heat-centres, and reduction of temperature can be produced by the elimination of these pyrogenic substances or by direct action on the heat-centres. If the antithermics were capable of actually destroying the ferments in the blood they would then act as abortive agents.—*Therapeutic Gazette*, October 1891.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P., Extra Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Angio-keratoma. — Under this term, which most aptly describes its pathological anatomy, Dr Pringle furnishes an exhaustive account of a rare and interesting disease. In persons sometimes in the enjoyment of excellent health, in others in which this was not so satisfactory, but who were subject to chilblains recurring severely each cold season, small grouped telangiectases made their appearance on the hands and feet. On the hands these were situated on the dorsal aspect, being most abundant over the proximal phalanges of the thumbs and fingers. The simplest eruptive elements consisted of tiny, almost imperceptible, pink points, which did not, however, disappear on pressure. Some were larger, from a pin's point to a pin's head in size, darker in colour, and situated in the true skin; on pressure or stretching, these lost a good deal of their colour at the periphery, but a central deep-red point, obviously a telangiectasis of a capillary loop, remained in all. A further stage was seen in the case of some which, grouped together, slightly but incontestably projected above the general skin-level. The acme of severity was attained in the case of certain growths which reached nearly the size of a split-pea. These were rough on the surface, hard to the touch, and warty-looking, owing to great thickening of the epidermis over them, which deadened their colour as compared with that of the simple lesions. The condition of the feet was similar, though more pronounced. Briefly, the tumour histologically was seen to be composed of an inflamed, hypertrophied, and infiltrated localized portion of the papillary layer of the skin, with greatly hypertrophied superjacent epidermis. The presence of large irregular lacunar spaces in the papillary layer and *rete Malpighi*, many of which were filled with blood, was also manifest. The disease which bears most resemblance to angio-keratoma is lymphangioma circumscriptum, but the distinctive points are as follows:—(*a.*) Angio-keratoma is always a sequela of chilblains. No such antecedents have been noted in lymph angioma. (*b.*) Angio-keratoma develops about early adult life, and occurs only on the hands and feet. Lymphangioma shows itself in early childhood, and is commonest on the trunk, neck, arms, thighs, and face. (*c.*) The lesions of angio-keratoma, when pricked, bleed. From those of lymphangioma a colourless, serous fluid exudes. (*d.*) The general lymphatic disturbances (œdema, elephantiasis, enlargement, etc.), occasionally noted in connexion with lymphangioma, have never been associated with angio-keratoma. The treatment, successful in that case in which it was tried, was electrolysis, employed much in the same way as for the removal of superfluous hairs.—*British Journal of Dermatology*, August, September, and October 1891.

STROPHULUS INFANTUM.—Under this name Gebert furnishes an exhaustive description of a well-known disease of infancy, called by some urticaria papulosa—a term which is very fairly distinctive; by others, lichen urticatus or prurigo infantilis. Among the causes which induce it he mentions one not previously alluded to, viz., frequently repeated hot baths, which seem in some children to have an irritant effect on the skin. In treatment, as the subjects are often anæmic, he finds easily assimilable preparations of iron to be most useful, combined with all other roborant measures. Of all drugs, however, intended to restrain the itching, he gives the first place to antipyrin in small doses at bedtime. ℞ Antipyrin, ʒss.; Aq. et syrup., āā ℥iij. One teaspoonful to a dessertspoonful as a dose. This renders the innervation of the skin less sensitive, and lessens the desire to scratch. The child must be lightly covered at night, and sleep in cotton or linen rather than wool. It is well to sponge the body with dilute and cold vinegar at night, while all warm baths must be entirely discontinued, the body being kept clean by rapidly conducted sponging with merely tepid water.—*Archiv für Kinderheilkunde*, Band xiii., Heft 3, 1891.

CREOLIN IN THE TREATMENT OF CHRONIC ECZEMA.—Dr R. Glasgow Pattison recommends a creolin lotion, of the strength of ʒj. in aqua ℥viij., in the treatment of chronic eczema. The parts affected having been freed from crusts or other accumulations by appropriate means, should be freely bathed in the freshly-prepared emulsion for from ten to fifteen minutes. If the disease is in the acute stage, or if there is much secretion, lint soaked in the liquid may be applied over the parts, and retained in position by suitable dressings. But if the eczema is of the squamous type, treatment in the intervals is best carried out by means of ointments—that which has yielded in his hands the best results being one composed of zinc oxide, white precipitate, and the glycerine of the subacetate of lead. Under this treatment recent cases recover with astonishing rapidity, and even those of long standing soon show signs of improvement, which go on to complete and permanent recovery.—*Dublin Journal of Medical Science*, July 1891.

THE ANATOMY OF CHEIRO-POMPHOLYX.—The clinical features of this disease, described first by Tilbury Fox as dysidrosis, and about the same time by Hutchinson as a variety of pemphigus, are as follows:—1. Depression of a nervous constitution by various causes, such as diminished outdoor exercise and increased amount of mental effort or study. 2. A vesicular eruption on the sides of the fingers and thumbs, sometimes nowhere else. The eruption appears suddenly, and is accompanied by itching, generally slight. It consists of minute vesicles embedded in the epidermis, which resemble sago grains, increase slightly in size, and become agglomerated. 3. After lasting about a week or ten days, the vesicles dry up without rupture or exudation. A slight desquamation follows, leaving a surface rather more highly sensitive and occasionally a little redder than the skin around. 4. The hands are generally hyperidrotic. Such were the conditions found in the case of Dr Winkleried Williams, who has afresh investigated its anatomy from sections made from portions of skin removed from his own hands, and examined serially. Fox and Crocker were of opinion that the disease was directly connected with the sweat-glands, and explained it thus:—1. A faulty innervation of the sweat-glands results in a markedly increased secretion of sweat. 2. Pressure of this secretion causes an obliteration of the lumen of the upper coils of the sweat-ducts. The sweat collects in the duct below, and forms a vesicle deep in the epidermis. Williams, from his investigations, concludes that the anatomical life-history of the vesicle in cheiro-pompholyx is as follows:—1. A mild inflammatory action in the papillary layer of the corium results in an exudation of serum, which finds its way between the rete cells and leads to their compression, degeneration, and destruction. 2. Vesicles are thus formed, which receive fresh fluid, and thus increase in size. 3. The vesicular contents dry up, fresh epithelium forms below, and the superficial, together with the dried vesicular contents, are desquamated. He does not think the vesicles are dilatations of the sweat-ducts, and notes that the anatomical characters very closely resemble those of vesicular eczema. The clinical resemblances to eczema have been noted by more than one observer.—*British Journal of Dermatology*, October 1891.

GOUT AND RHEUMATISM.—The influence of gout, and to a lesser degree that of rheumatism also, in the causation or the perpetuance of some skin diseases is conceded, and the following remarks of Mr Hutchinson on the subject are of value:—"Speaking generally, I think we may safely assign the relative shares of gout and rheumatism, in any given case, by inquiring as to the patient's susceptibilities respectively to the influence of diet and of weather. Without doubt, gout and rheumatism are often associated, and produce mixed results. If a person is morbidly sensitive to damp and cold, and if his susceptibility is shown by the development of pains in his joints and fascia, etc., he is rheumatic; if, on the other hand, he is sensitive to food, and if certain articles of diet produce joint-pains, etc., then he is gouty. That which does good for the rheumatic element in the case is often just the opposite to what is desirable for the gouty part; and, if the two be not carefully distinguished, the physician and patient may both believe that they are curing gout, when really it is the rheumatism which is being bettered. I have for many years been in the habit of forbidding fruit to all patients who suffer from tendency to gout. In every case in which a total abstainer of long standing has come under my care for any affection in relation to gout, I have found, on inquiry, that he has been a liberal fruit-eater. It has, of course, long been well known that the deleterious principles in beer and wine are not the alcohol itself, but its combinations with sugar, glucose, etc., which these fluids contain. Fruits are by no means equally injurious; and I would say that cooked fruits, especially if eaten hot with added sugar, are the most injurious of all. Fruit eaten raw, and without the addition of sugar, appears to be comparatively safe, especially if taken in the garden and without other food. It is the addition of fruit juices and sugar (both grape and cane) to a hearty meal with which alcohol has been taken that is particularly dangerous. Thus few wine-drinkers take fruit or sweets to any extent, while those who abstain from alcohol usually experience a craving for sugar and sweet fruits. I think that the children of those who in former generations have established a gouty constitution may, although themselves water-drinkers, excite active gout by the use of fruit and sugar."—*Archives of Surgery*, July 1891.

USES OF THE ACID NITRATE OF MERCURY AS A CAUSTIC.—Mr Hutchinson ascribes much of his success in cases which had proved disappointing under other measures to the liberal use of this valuable agent. He employs it for nearly all unhealthy-looking sores, and wherever an inflammatory process is thought likely to prove infective to other parts. Thus boils, inflamed acne, almost all forms of tertiary syphilitic disease of skin or mucous membranes, as well as all varieties and degrees of phagedænic action, come under its influence. The solution of the acid nitrate of mercury, renewed once in every two months or so, always stands on his window-table, and with it is a tray of glass brushes of various sizes, and some rolls of the thickest blotting-paper. The brush used should be pointed in cases where it is desired to pencil out dilated bloodvessels or to touch small spots such as those of acne. In these cases a very minute quantity of the caustic is all that is desirable, and the blotting-paper should be applied, to the part after half or a quarter of a minute, according to the effect it is wished to produce. Where more acid than is desired has been applied, or it has run down, the instant application of the blotting-paper will obviate any ill consequences. It is necessary to use it with a very light hand for such diseases as acne of the face, where the prevention of a scar is important.

For large ulcers, for patches of lupus, and for the tubercles and patches of syphilitic lupus, a good broad-ended brush is used, and the acid freely applied. Under these circumstances, it is allowed to have two or three minutes to act on the part before blotting-paper is used; or if the structures be thick, it may be painted on several times at intervals of a few minutes. In many cases he has known the acid thus cure, at a single application, spreading patches of syphilitic lupus which had long resisted internal treatment. When it is necessary to use the acid freely it is painful, and the pain may last for twelve to twenty-four hours, and patients should be warned of this beforehand.—*Archives of Surgery,* October 1891.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. BALLANTYNE, M.D., F.R.C.P.E., Lecturer on Midwifery and Gynæcology, and on Diseases of Infancy and Childhood, School of Medicine, Edinburgh.

A CASE OF ACHONDROPLASIA.—Dr F. Villa (*Annali di Ostetricia e Ginecologia,* September 1891) describes a case of the rare disease of the fœtus known as achondroplasia, or micromelic rickets. The mother was a pluripara of twenty-six years of age, and of regular build, having a well-formed pelvis. About the sixth month of her pregnancy there was a sudden and rapid increase in the size of the abdomen, with great epigastric and præcordial pain. Acute hydramnios was diagnosed. The patient's urine was normal, and she was not feverish. The membranes were punctured, and labour set in. There was a large quantity of amniotic fluid (4200 grammes), and the placenta, which was œdematous and friable, weighed 400 grammes. The fœtus was 31 cms. in length, but the peculiarity was noted that the distance from the umbilicus to the vertex (21 cms.) was much greater than that to the heel (10 cms.) This disproportion gave to the infant a curious appearance. The basis cranii was small transversely and antero-posteriorly, and a compensatory development had taken place at the expense of the fronto-bregmatic region. There was a third fontanelle midway between the anterior and posterior ones in the sagittal suture. The neck was apparently short. The abdomen was prominent, and suggested the presence of ascites, but such a condition did not exist. There were no alterations or defects on the viscera. The pelvis had a marked inclination, the conjugata vera was rather short, the promontory of the sacrum not very prominent, and the sacrum flattened. Defects of ossification were present, especially in the long bones. The diaphyses were short, thick, and curved; the cartilaginous epiphyses were large. There was found under the microscope a marked disturbance of endochondrial ossification. There were no syphilitic lesions. The author concludes by giving a good summary of similar cases recorded by Porak, Müller, Englisch, Mary Smith, and others.

OVARIOTOMY DURING PREGNANCY.—Dr Christian Fenger (*American Journal of Obstetrics*, September 1891) read before the Chicago Gynæcological Society the account of a case in which a dermoid cyst complicated pregnancy. The patient was a primipara, thirty years of age, and had suffered since her marriage from severe attacks of abdominal pain, diagnosed as ovarian colic. The dermoid cyst was found lying behind the uterus, blocking up the true pelvis. When the pregnancy was about five months old, Dr Fenger performed laparotomy, and removed the cyst, which was the size of a small child's head. The subsequent course of the pregnancy was normal, and a living full-time child was delivered by means of forceps. The writer discusses the question of ovariotomy during pregnancy, and quotes the conclusions of Stratz, which are as follow:—Ovariotomy is inevitable, and its prognosis is not aggravated by the presence of pregnancy; delivery in childbed without the tumour has a much better prognosis than when the tumour exists; one out of six tumours is malignant, contra-indicating puncture; and the prognosis for the children is much better. Dr Fenger points out that small tumours in the true pelvis are especially dangerous both to mother and child.

SARCOMA OF THE OVARY.—Professor Porter (*Philadelphia Medical News*, September 12, 1891) records a case of ovarian sarcoma in an unmarried girl, eighteen years of age. There was a large solid tumour, extending from the pelvis to a little above the umbilicus. It was unconnected with the uterus, which was retroverted, but movable. Laparotomy was performed, and the tumour, which was a sarcoma of the left ovary, not adherent, with a small but very vascular pedicle, was removed. There was some ascitic fluid in the abdomen. The tumour was of the round-celled variety, and weighed 7½ lbs. The patient made a complete recovery.

ANENCEPHALUS.—Dr Schoonmaker (*Brooklyn Medical Journal*, September 1891) records the case of a patient, twenty-two years of age, who gave birth to an anencephalic fœtus. The infant presented by the deformed head, but this was at first mistaken for the breech. The fœtus was delivered by means of forceps; it breathed feebly and irregularly for eight hours, and then died in convulsions. The mother anticipated some defect in the head of her infant, for when about two months pregnant she had been frightened by a blow from the stuffed skin of an alligator. The case, therefore, is one in which a maternal impression was the alleged cause of the deformity of the fœtal head.

Part Fifth.

MEDICAL NEWS.

Royal Colleges of Physicians and Surgeons of Edinburgh and Faculty of Physicians and Surgeons of Glasgow.—The following candidates passed their Final Examination for the Triple Qualification in Medicine and Surgery at the sittings held in November 1891, and were admitted L.R.C.P. & S.E., and L.F.P. & S.G. :—Philip Kotalawala, Ceylon; Francis Evered, Curry Rivell; John Baptist de Quadros, Bombay; Frank Orchard Lawrence, Canada; John Featherstone, Kellah; William Gilchrist, Ontario; Martin James Mahony, Yorkshire; Henry Michael Bayer, County Limerick; Forbes Elliott Godfrey, Toronto; John Acheson Wilkin, Armagh; Thomas Pitcairn Shearer, Glasgow; Harriet Maude Mary Hosain, London; Hugh Lewis Hughes, Llanbadarn-Fawr, Wales; Charlotte Maria Wheeler, Crewe; Alfred Charles Festing Smith, County Donegal; Margaret Kate Barclay, London; David Samuel Browne, County Armagh; Thomas Lee Pennington, Liverpool; Francis Hugh Scott, Belfast; Herbert Whalley, Bradford; John Francis D'Abreu, India; Robert Reid, County Antrim; James Josiah Edwards, Jamaica; Thomas William Clay, Holyhead; Ronald M'Clean Stokes, South Africa; William Impey Taylor Baker, South Africa; Frederick William Barton, Lincolnshire; David Donnelly, County Limerick; Walter Hirst, Leeds; Thomas Jobling Tonkin, London; John Jesudason Srinivasagam Pellay, South India; Arthur Stennett Jaques, Yorkshire; James Philp, Glasgow; Herbert Roger Horne, Melbourne; Waller Temple Rogers, Surrey; Henry L'Estrange, India; George Frederick Chadwick, Lancashire; William Armour, Glasgow; Framji Shapoorji Gotla, Bombay; Albert Francis Walker, Liverpool; John Carmichael Smith, New Zealand; Joseph Richardson, Lancashire; Charles Horace Andrews, Cape Town; Louis Segol, Sydney; Herbert Connop, Devon; William Joseph Murphy Barry, Cork; Arthur William Stafford Smythe, Drogheda; James Hamilton, Lanark; Ernest Stanley Towert, Cape Town; John Ainslie Foulis, Edinburgh; William Hall, Wigan; Kenneth Campbell, Ross-shire; George Macdonald, Kirkintilloch; Paul M'Kenna Terry, Cork; Augustine Francis Downey, Cork; and Francis Ernest Gunter, India.—Of 17 candidates for Divisional Subjects, the following passed in *Medicine* and *Therapeutics:* Ernest William Frampton Kirkman, and George Hewlett Stanhope Hillyar,—In *Surgery* and *Surgical Anatomy:* Frank Pickering Bassett.—In *Midwifery* and *Medical Jurisprudence:* Edward Whitley Allsom; Ernest William Frampton Kirkman, Thomas Llewelyn Davies, George Hewlett Stanhope Hillyar, and William Benson.

Royal College of Physicians, Edinburgh.—The following candidates passed their Final Examination for the degree in Medicine at the sittings held in November 1891, and were admitted L.R.C.P. Ed. :—James Burke, Tredegar; Foden Wilson, Birkenhead.

Glasgow Obstetrical and Gynæcological Society.—Office-Bearers for Session 1891–92 :—*Hon.-President,* Sir Spencer Wells, Bart.; *President,* G. Halket, M.D.; *Vice-Presidents,* Robert Pollok, M.D., and G. A. Turner, M.D.; *Treasurer,* Alex. Miller, L.R.C.P.E.; *Secretary,* J. Nigel Stark, M.B.; *Reporting Secretary,* Robert Jardine, M.D.; *Pathologist,* A. Milroy, M.D.; *Council,* T. Richmond, L.R.C.P.E., Robert Kirk, M.D., H. St Clair Gray, M.D., E. H. L. Oliphant, M.D., J. Carlyle, M.D., and M. Black, M.D.

Duncan and Flockhart's "Baumol" superfatted skin Soap.—The value of the idea so admirably worked out by Dr Unna of Hamburg, of preparing a soap which, instead of being alkaline, as most, or neutral, as a few toilet soaps, should contain an excess of fat beyond that saponified in the process of manufacture, has led to that form of flattery whose sincerity is shown by imitation. Nor is there any conceivable reason why as good or even a much better soap than his well-known and much appreciated "ueberfettete basis Seife" should not be produced in Great Britain, the natural home of soap. Messrs Duncan, Flockhart, & Co., with their usual energy, have taken the matter up, and have manufactured a toilet soap which will compare most favourably with the very best of those in the market. The specimens submitted to us are of a size and shape most convenient to handle, are coloured a pale flesh tint, and give off when used a delicate and fragrant perfume. Mr D. B. Dott, F.I.C., F.C.S., has furnished us with the following account of it:—"This is a genuine superfatted or superoleated soap, consisting essentially of stearate and oleate of sodium. It is prepared from those materials which are recognised by all authorities to be the best for the purpose; no cocoa-nut oil, or similar objectionable substance, being used in its manufacture. This soap is absolutely free from uncombined alkali, contains approximately 3 per cent. of unsaponified fat, very little water, and, in brief, possesses all the properties of a first-class toilet soap." We have submitted it to the most careful tests, and have no hesitation in expressing the opinion that it is incomparably the best soap we have ever used. It can be confidently recommended as unsurpassed for the nursery, for shaving, and for general toilet use.

DERMATOL.—The undeniable value of iodoform in the treatment of various forms of ulceration and gangrene has led to many endeavours to replace it by some less objectionable compound, and the most recent of these is dermatol. This is a basic gallate of bismuth. Now, in chemistry one cannot always prognosticate the properties of a salt from the mere knowledge of the acid and base from the union of which it originates. Sometimes the result is totally different from either. But when a weak acid is combined with a strong base it may be possible to infer something, and viewed in this light dermatol promises well. It ought to embody the soothing effect of bismuth and the mild astringency of gallic acid. This is borne out by our experience, which is, however, somewhat limited. We have tried a sample sent us for the purpose by Messrs Burroughs, Wellcome, & Co. It is a pale yellow amorphous powder, insoluble in water, odourless, and seems stable. Applied to granulating surfaces it has proved unirritating, and appears to hasten cicatrization. It exhibits a desiccating influence on the part, and is said to prevent bacterial development "by deterioration of the nutritive soil." It may be employed as a powder alone, or diluted by the addition of talc or French chalk, or in ointment, as one part each of dermatol and vaseline, and eight of lanoline, in intertrigo and slight cases of moist eczema. We think it will repay more extended trial.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

HARVARD MEDICAL SCHOOL,
BOSTON, *Oct.* 31, 1891.

DEAR SIR,—My attention has recently been called to the Address, by Dr Norman Walker, entitled "The Medical Profession in the United States," published in the *Edinburgh Medical Journal* for August and September 1891. While I recognise the general accuracy of the information conveyed in this Address, there are two passages, referring to the Harvard Medical School, which may possibly convey an erroneous impression to persons not familiar with the facts. I therefore beg you to allow me space enough in your journal for a few words of explanation.

In the first of these passages (Aug. No., pp. 136, 137), Dr Walker, alluding to the fact that in this country Medical Schools are often situated at some distance from the University to which they belong, says: "For instance, the famous Harvard (Boston) School has really no connexion with the Old University, which is situated at Cambridge, some distance on the other side of the river from Boston."

Now, as the distance between the headquarters of the University and the Medical School is only 2½ miles in a straight line, as the President of the University presides at the meetings of the Medical Faculty, and as the President and Fellows manage the funds, pay the salaries, appoint the officers of instruction, and award the diplomas of the Medical School precisely as in all the other departments of the University, it seems to me that it can hardly be said that the Medical School has "no connexion" with the University.

In the second passage (Sept. No., pp. 243, 244), Dr Walker writes as follows in reference to the amount of work done by students in this School:—"In their favour I have to say that I think they work harder than do our students—in fact, they work too hard. One man whom I met, a young graduate of English birth, who was compelled by stress of fortune to get through his course in two years or not at all, told me, and I had no reason to doubt him, that during the whole of that time he worked an average of sixteen hours a day."

From these sentences a reader might readily receive the impression that it is possible for a student to obtain the degree in this University after two years of medical study.

This is, however, by no means the case. The Medical School has always required three years of medical study from all candidates for its degree, and after next autumn the required course will cover four full academic years.

These may not be very important corrections, but, in view of Dr Walker's obvious desire to make a perfectly fair presentation of the subject of which he writes, I venture to send them to you, feeling sure that they will be welcomed by Dr Walker himself, and by all who desire to inform themselves on the subject of medical education in America.—Yours very truly,

H. P. Bowditch, *Dean.*

PUBLICATIONS RECEIVED.

R. Bartholow, M.D., etc.,—A Manual of Hypodermatic Medication. J. B. Lippincott Co., Philadelphia, 1891.

Emil Behnke,—Stammering. T. F. Unwin, Lond., 1891.

H. C. Bœnning, M.D.,—A Treatise on Practical Anatomy. F. A. Davis, Philadelphia, 1891.

Ernest Brücke.—The Human Figure: Its Beauties and Defects. H. Grevel & Co., Lond., 1891.

H. C. Burdett.—Hospital Annual and Year-Book of Philanthropy. The Hospital, Ltd., London, 1891.

F. M. Caird, M.B., etc., and C. W. Cathcart, M.B., etc.,—A Surgical Handbook for the Use of Students, Practitioners, House-Surgeons, and Dressers. Chas. Griffin & Co., Lond., 1891.

Catechism Series: Anatomy: Part V., The Thorax; Part VI., Bones and Joints. E. & S. Livingstone, Edinburgh, 1891.

M. Charteris, M.D.,—The Practice of Medicine. J. & A. Churchill, London, 1891.

T. S. Clouston, M.D.,—The Neuroses of Development. Oliver & Boyd, Edin., 1891.

Congrès Français de Chirurgie. Baillière et Cie, Paris, 1891.

Russell Coombe, M.A., F.R.C.S.,—A Pocket Epitome of the British Pharmacopœia. Baillière, Tindall, & Cox, Lond., 1891.

S. Coupland, M.D., etc.,—Notes on the Examination of the Sputum, Vomit, Fæces, Urine, and Blood. H. K. Lewis, Lond., 1891.

Diagrams of the Mouth, Fauces, and Larynx. J. T. Balcomb, London, 1891.

C. H. Fagge, M.D., etc., and P. H. Pye-Smith, M.D., etc.,—Text-Book of the Principles and Practice of Medicine. 2 vols. J. & A. Churchill, Lond., 1891.

R. Farquharson, M.P., M.D., etc.,—A Guide to Therapeutics. Smith, Elder, & Co., Lond., 1891.

J. Finlayson, M.D.,—Clinical Manual for the Study of Medical Cases. Smith, Elder, & Co., Lond., 1891.

F. J. Gant, F.R.C.S.,—The Lord of Humanity. Longmans, Green, & Co., London, 1891.

Golden Rules of Surgical Practice. John Wright & Co., Bristol, 1891.

Gustavus Hartridge, F.R.C.S.,—The Ophthalmoscope. J. & A. Churchill, London, 1891.

Christopher Heath.—Clinical Lectures on Surgical Subjects. J. & A. Churchill, London, 1891.

International Clinics. Vol. II. Young J. Pentland, Edin., 1891.

Sir Asman Jah, K.C.I.E.,—Report of the Hyderabad Chloroform Commission. Bombay, 1891.

H. Macnaughton Jones, M.D., etc.,—Practical Manual of Diseases of Women and Uterine Therapeutics. Baillière, Tindall, & Cox, Lond., 1891.

Dr Alice Ker.—Motherhood: a Book for every Woman. John Heywood, Manchester, 1891.

Sebastian Kneipp.—My Water Cure. Wm. Blackwood & Sons, Edin., 1891.

F. Chas. Larkin, F.R.C.S., and R. Leigh,—Outlines of Practical Physiological Chemistry. H. K. Lewis, London, 1891.

Medical Communications of the Massachusetts Medical Society. Boston, 1891.

P. E. Muskett.—Prescribing and Treatment in the Diseases of Infants and Children. Young J. Pentland, Edin., 1891.

H. A. A. Nicholls, M.D., etc.,—The Leeward Islands Medical Journal. J. & A. Churchill, Lond., 1891.

H. G. Piffard, M.D., and R. M. Fuller, M.D.,—Practical Treatise on Diseases of the Skin. H. K. Lewis, Lond., 1891.

P. C. Remondino, M.D.,—History of Circumcision from the Earliest Times to the Present. F. A. Davis, Philadelphia, 1891.

R. Roose, M.D., etc.,—Nerve Prostration and other Functional Disorders of Daily Life. H. K. Lewis, Lond., 1891.

Dr med. K. Shibata.—Geburtshülfliche Taschen-Phantome. J. F. Lehmann, München, 1891.

Priestley Smith.—Pathology and Treatment of Glaucoma. J. & A. Churchill, London, 1891.

George Thin, M.D.,—Leprosy. Perceval & Co., London, 1891.

R. Thorne Thorne, M.B., etc.,—Diphtheria: its Natural History and Prevention. Macmillan & Co., Lond., 1891.

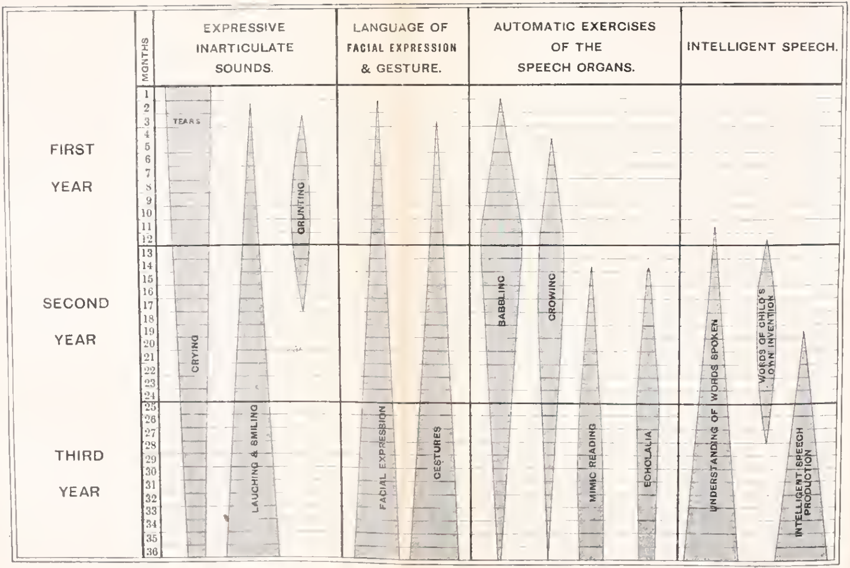
Thirty-third Annual Report of the General Board of Commissioners in Lunacy for Scotland, 1891.

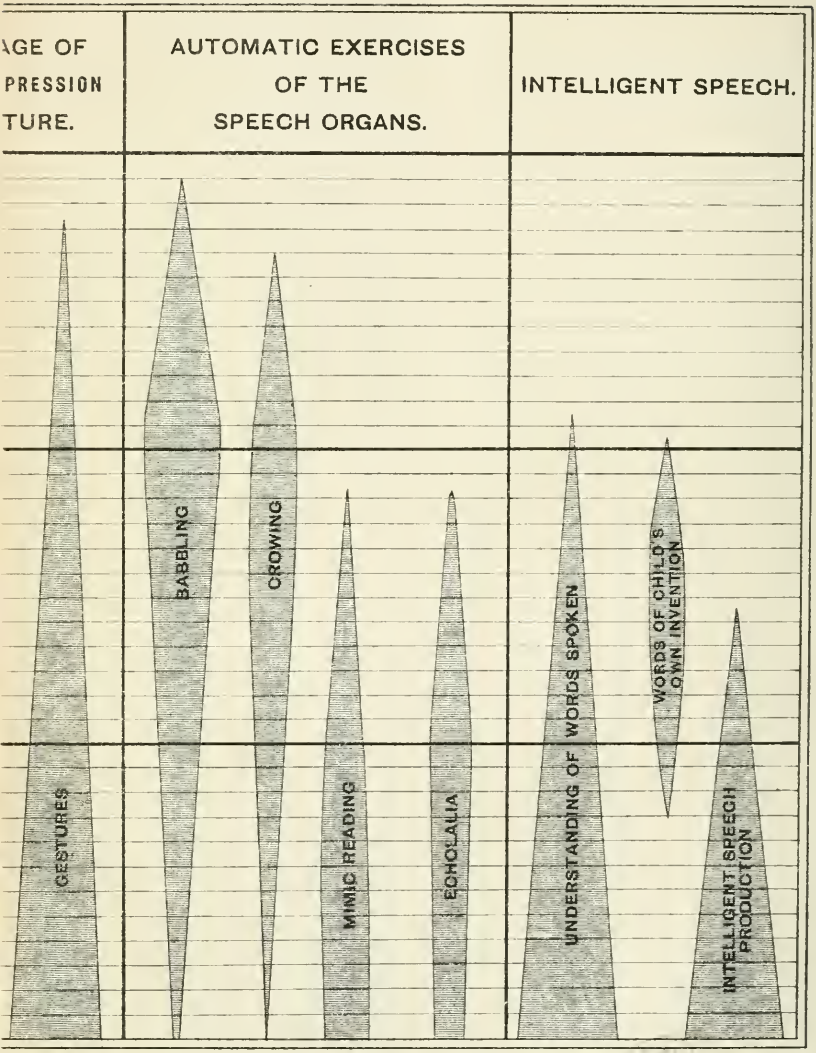
Wm. Thornton.—Origin, Purpose, and Destiny of Man. Boston, 1891 (Published by Author).

Transactions of the Clinical Society of London, vol. 24. Longmans, Green, & Co., Lond., 1891.

Transactions of the Obstetrical Society of London, vol. 33. London, 1891.

A. D. Waller, M.D.,—An Introduction to Human Physiology. Longmans, Green, & Co., Lond., 1891.


MONTHS
EXPRESSIVE INARTICULATE SOUNDS.
LANGUAGE OF FACIAL EXPRESSION & GESTURE.
AUTOMATIC EXERCISES OF THE SPEECH ORGANS.
INTELLIGENT SPEECH.
FIRST YEAR
SECOND YEAR
THIRD YEAR
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
TEARS
CRYING
LAUGHING & SMILING
GRUNTING
FACIAL EXPRESSION
GESTURES
BABBLING
CROWING
MIMIC READING
ECHOLALIA
UNDERSTANDING OF WORDS SPOKEN
WORDS OF CHILD'S OWN INVENTION
INTELLIGENT SPEECH PRODUCTION


AGE OF
PRESSION
TURE.
AUTOMATIC EXERCISES OF THE SPEECH ORGANS.
INTELLIGENT SPEECH.
GESTURES
BABBLING
CROWING
MIMIC READING
ECHOLALIA
UNDERSTANDING OF WORDS SPOKEN
WORDS OF CHILD'S OWN INVENTION
INTELLIGENT SPEECH PRODUCTION

945

R
31
E22
v.37
no.1-6

Edinburgh medical journal

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE